

eWON Family

500, 2001, 4001, 2101, 4101, 4002, 4102, 2104, 4104,
2005, 2005CD, 4005, 4005CD

General Reference Guide

ver 1.5



COOL INTERNET TELECONTROL SOLUTION

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1 Introduction

The aim of this guide is to provide you exhaustive information about the multiple eWON firmware features.

Considering the gains in terms of optimization and performances that firmware version 5 brings, we recommend you to migrate from version 4 to version 5 if not already done.

Among the new items that are embedded in version 5, – the new web interface, the PPI-MPI-ISOTCP IOServers (MPI needs specific eWON hardware), the VPN (not available in all the eWON types), more security with “Basic Authentication” login – may convince you to upgrade from v4 to v5.

The upgrade process is described very precisely at the end of this manual, at chapter “Upgrading the eWON firmware” on page 192.

This guide describes the version 5.3 features for all the eWON types. You will then find in this guide some references to a matrix table that you can find at this end of this guide, in which you can quickly check whether the described feature impacts your eWON type or not. Please refer to chapter “Table of comparisons between eWON types” on page 203.

Users who prefer to consult the printed manual should keep a printed copy of the eWON's comparison table apart from the entire guide to quickly check the different features that are available or not, depending on the type of eWON they are working with.

Now let's discover all the possibilities offered by your eWON V5 on a daily basis.

Firmware 5.6s2: added features

- SNMP IO Server

Firmware 5.5: added features

- MITSUBISHI IO Server
- PPI Multi-Master
- ENDIAN server support

Firmware 5.4: added features

- DHCP
- ADSL
- More Dynamic DNS providers available
- Web interface:
 - Modem + Internet connection Wizards
 - GSM operator selection + antenna Level displayed on led
 - ISDN: MSN definition
- HITACHI IO Server

2 The eWON login page

2.1 Access from a Computer Browser

When you connect to the eWON with Internet Explorer, you will be invited to log you on.

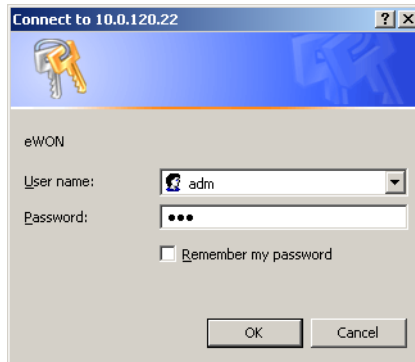


Figure 1: eWON login page

The factory predefined parameters to login on the eWON are:

IP address	10.0.0.53
Login	adm
Password	adm

Table 1: eWON default login parameters

IMPORTANT! Password IS case sensitive but user name is not.

It is recommended to change the password of the "adm" user to protect it against any intrusion. You will be able to change the user configuration in the Users setup screen of your eWON (please refer to chapter "Users Setup" on page 8).

2.2 Access from a PDA Browser

The default Website of eWON is designed to be viewed on a PC Browser.

In order to provide an access to the PDA home page, the full URL: http://ewon_ip/indexpda.htm must be entered.

If the eWON is only supposed to be connected from PDA, the default home page (see "User defined home page" on page 13) can also be changed.

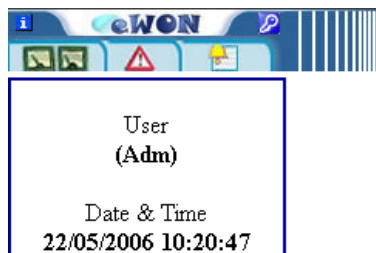


Figure 2: PDA Website

3 eWON Configuration Interface

Just after you have logged in successfully, the eWON Web Interface will be displayed (as explained in the next chapter).

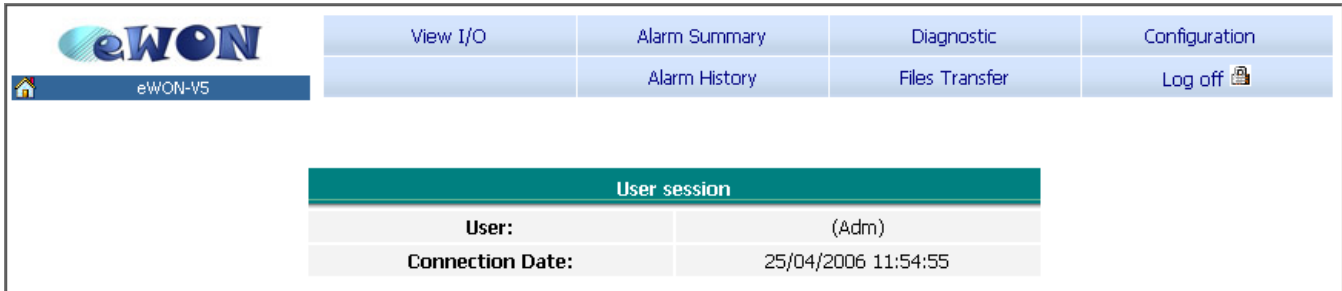


Figure 3: eWON interface page

But before analyzing the Monitoring Web Interfaces page, you need to configure your eWON. Click on the **Configuration** menu item. The following Configuration web page then appears:

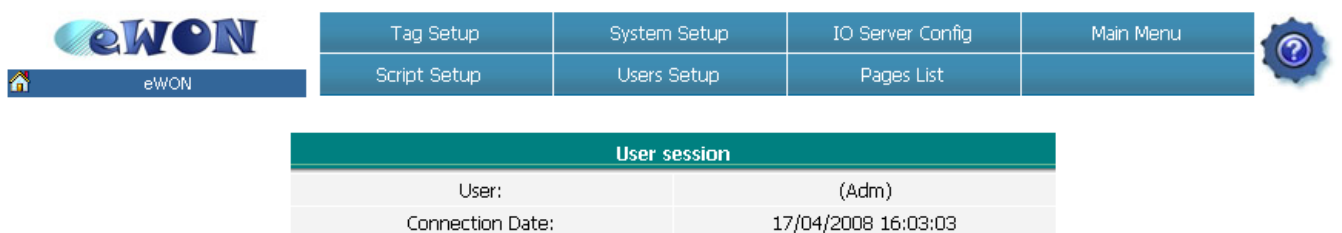


Figure 4: eWON configuration links

3.1 Overview

The Configuration menu includes the following points:

- **User's list**

The user's list is used by the eWON to restrict access to the various features of the eWON according to the user's rights. It also allows logging the user's actions (like alarm acknowledge...).

See also chapter "Users Setup" on page 8

- **Tags list**

The eWON monitors and manages variables (called *Tags*). A Tag can be *Boolean* or *float*, and Tags are produced by IO servers. The configuration of a Tag defines its IO server and all its monitoring parameters (historical logging (Warning: not for all eWONs versions - see table page 203), alarm levels, etc.

See also chapter "Tag definition: Introduction" on page 67

- **System configuration**

Communication and global configuration of the eWON are defined here.

See also chapter "System Setup" on page 12

- **IO Server configuration**

As explained in chapter "Tag definition: Introduction" on page 67, each Tag is produced by an IO server. An IO server can interface the physical eWON IO or the Modbus remote IO, etc. Some of these IO servers require some configuration.

See also chapter "IO servers setup" on page 79

- **Pages definitions**

It is possible to organize the Tags by groups. These groups are called "pages" and they help keep a clearer organization of the Tags and also manage per user rights for the Tags. Two pages, called "Default" and "System" are automatically defined, and up to 10 pages can be user defined.

See also chapter "Pages configuration" on page 79

- **Scripts Configuration**

The Basic language that is embedded in the eWON allows you to create your own scripts that you will use to get access to the data that are stored in the eWON, in order to perform real-time monitoring or programming actions on alarms,...

See also chapter "Script Setup" on page 80

- **Wizards**

Some wizards are available to help you quickly configure some eWON features.

See also chapter

3.2 Users Setup

The **Users Setup** page allows building the list of authorized eWON users.

User Login	First Name	Last Name	Rights	Information
<input type="checkbox"/> Adm		voac		

Figure 5: eWON Users Setup page

The user's page lists all the eWON users and attributes. The first time that you connect to the eWON, the default user is Adm. It is recommended to modify the default password of the Administrator user.

3.2.1 To edit a user

Click on the user's name link in the **User Login** column.

3.2.2 To create a new user

Click on the **Create New user** link.

In both cases, you will get the following edit window:

Identification		
First Name:	<input type="text"/>	Last Name:
User Login:	<input type="text" value="Adm"/>	Password:
		Confirm Password:
Information:	<input type="text"/>	

Rights	
<input type="text" value="All"/>	Tag Page allowed (Default is always allowed)
<input type="text" value="All"/>	User Directory allowed (/usr/ is always allowed)
<input checked="" type="checkbox"/>	View IO
<input checked="" type="checkbox"/>	Force Outputs
<input checked="" type="checkbox"/>	Acknowledge Alarms
<input checked="" type="checkbox"/>	Change Configuration
<input checked="" type="checkbox"/>	FTP server access
<input checked="" type="checkbox"/>	eWON Files access [EBD]

Callback		
Enabled	<input type="checkbox"/>	Callback must also be globally enabled in System Config
Callback phone number value is	<input type="text" value="Mandatory"/>	Defines if user can change phone number
Callback phone number	<input type="text"/>	User's login and password are used to connect to server

Figure 6: eWON user's configuration page

3.2.3 Logon parameters

First Name and **Last Name** are detailed (and optional) information about the user, while **User Login** and **Password** are mandatory (they are used during the logon procedure).

Logon procedures using the **User Login** and **Password** are:

- Main eWON access logon
- FTP server access
- User defined page Digest access authentication (please refer to chapter “eWON identification” on page 13)
- PPP Dial up connection

Warning: depending on the eWON's version (c.f. table at the end of this manual page 203)

The same user name and password will be used for the different access.

3.2.4 User's rights

The following rights can be selected for user:

Rights	
All	Tag Page allowed (Default is always allowed)
All	User Directory allowed (/usr/ is always allowed)
<input checked="" type="checkbox"/>	View IO
<input checked="" type="checkbox"/>	Force Outputs
<input checked="" type="checkbox"/>	Acknowledge Alarms
<input checked="" type="checkbox"/>	Change Configuration
<input checked="" type="checkbox"/>	FTP server access
<input checked="" type="checkbox"/>	eWON Files access [EBD]
<input checked="" type="checkbox"/>	Java Forms access
<input checked="" type="checkbox"/>	Control Java JVM

Figure 7: User Rights

View IO	allows accessing the SCADA real time IO screen
Force outputs	allows changing the eWON outputs
Acknowledge alarms	allows acknowledging alarm
Change configuration	allows accessing the configuration part of the eWON
FTP server access	allow this UserName/Password to be used to access the eWON FTP Server
eWON File access [EBD]	allows accessing the File Transfer page. allow this UserName/Password to be used to retrieve eWON Files (containing Export Block Descriptor) with HTTP request using /rcgi.bin/ParamForm?AST_Param=\$\$...EBD...
Java Forms access	allows accessing the Java Forms
Control Java JVM	allows this user to control the Java JVM

Table 2: user's rights explanations

3.2.5 User's directory restriction

When the user web site is built, HTML (or SHTML) pages can be placed in subdirectories. The root directory of the user defined web site is **/usr** (from the FTP directory structure). Every user has access to that directory.

/usr is considered as DEFAULT directory for the web site.

For this explanation, assume that the following FTP directory structure is defined:

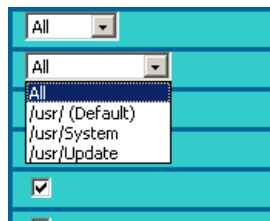
/usr/System contains pages for system administration

/usr/Update contains HTML files to update Tags

There are 10 user defined pages (please refer to chapter "Pages configuration" on page 79) and one default page. Let's suppose that for the explanation the following pages have been defined:

Page 2	System
Page 3	Update

When editing users rights, the following list would be proposed:



The following security schemes would be possible:

Dir. Right selected	Access description
All	HTML Pages in any directory will be accessible.
Default	Only the /usr directory pages will be accessible.
System	<p>/usr and /System directory pages will be accessible.</p> <p>Note: this is obviously not useful because /usr/Update will not be accessible which is probably not what is required for an "administrator". In the "administrator" case, the best selection is probably "All".</p>
Update	<p>/usr and /usr/Update directory pages will be accessible.</p> <p>Note:</p> <p>/usr is always accessible.</p> <p>When a subdirectory is accessible, all its subdirectories are accessible as well.</p> <p>Example: /usr/Update/image would also be accessible.</p>

Table 3: user's security schemes - 1

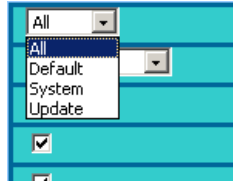
The proposed directories list is derived from the PAGES LIST. It is of the user's responsibility to create the same pages as the directories in the FTP structure (otherwise security setup will not be possible).

3.2.6 Tag pages restriction

There are 10 user defined pages (please refer to chapter "Pages configuration" on page 79) and one default page. The security mechanism follows the below rules:

- User has always access to the "Default" page
- User can have access to all pages
- User can have access to only 1 page

Example: taking the same pages as in the previous example, the following selection box appears:



The following security schemes would be possible:

Page Right selected	Access description
All	Access to all Tag pages is granted.
Default	Only the "Default" page is accessible.
Update	"Default" and "Update" pages would be accessible.
System	"Default" and "System" pages would be accessible.

Table 4: user's security schemes - 2

3.2.7 To delete a user

Click on the check box just next to the user's login of the user that you want to delete and click on the **Delete Selected Users** link.

- Note 1: you can select for deletion more than one user at the same time
- Note 2: the Adm user won't be deleted (but you can rename it)
- Note 3: password is CASE SENSITIVE

3.2.8 Callback settings

Warning: depending on the eWON's version (c.f. Table 187 on page 203)

When the callback is enabled as a global parameter in the **COM Setup** page, the user can initiate a User's callback and specify when the trigger will be started for the callback.

The callback phone number can be forced (from this menu), then the user can only initiate a call to a fixed phone number; or User Defined, then he can modify the phone number. In the first case, the list box is set to **Mandatory**, and in the second case, it is set to **User Defined**.

The callback phone number can be specified here. Remember that the user's login and password that have been defined for the eWON access are used as login and password on the remote server called for callback.

Callback		
Enabled	<input type="checkbox"/>	Callback must also be globally enabled in System Config
Callback phone number value is	Mandatory	Defines if user can change phone number
Callback phone number	<input type="text"/>	User's login and password are used to connect to server

Figure 8: User's callback settings

3.2.9 Validation of the User's settings

When all the required fields are filled in, you can either click on the **Add/Update** button (to validate your changes) or on the **Cancel** button (to undo your changes).

3.3 System Setup

The system setup page (accessed by clicking on the **System Setup** item from the configuration menu) allows to set all the eWON system parameters and looks as follows:

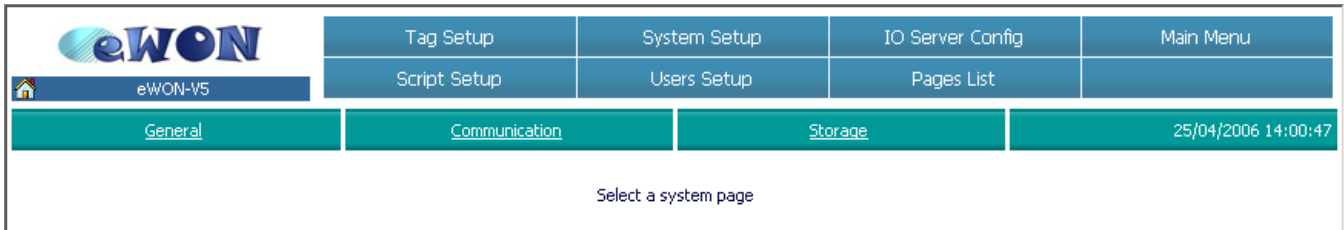


Figure 9: eWON system configuration page

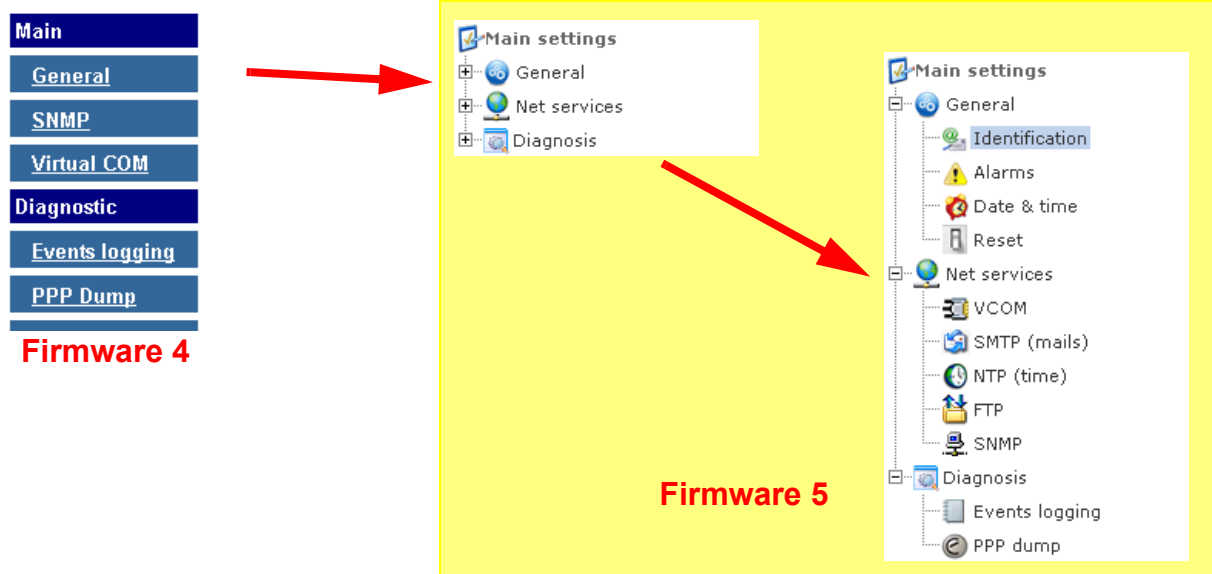
This section has a high impact on the eWON behavior (mainly from a communication point of view). You should fill it in carefully.

The System setup page is divided in three sections:

- **The Main system setup (General)**
Defines all the eWON global settings, except for settings regarding the eWON communication. The user can modify the Email, FTP and NTP parameters, along with reboot.
- **The Communication setup section**
Includes all the communication settings of the eWON. These settings are separated from the Main settings and even stored at a different place inside the device in order to be able to format the eWON flash file system without affecting the communication settings (see also chapter “eWON configuration and files storage” on page 199. A menu allows the user to reset the communication parameters to their default values.
- **The storage setup section**
Used to set up the way the memory resources from the eWON are used.

3.3.1 General system setup

The General system page was presented in firmware 4 with a links menu on the left. These links are replaced by a tree with icons in firmware 5 (see below).




3.3.1.1 eWON identification

Figure 10: eWON system general setup – eWON identification

Control	Description
eWON Identification	The name of the eWON. This information is added in each eWON e-mail alarm notification. Check that this identification and the next one allow you to identify your eWON without any doubt.
General Information	As for the eWON identification, you can put a free text. But it can be very useful to indicate here the eWON geographical location and phone number.
User defined home page	When a user defined web site is used, the home page of the eWON web site can be replaced by a user defined web page. If your default home page is a viewON synopsis, you need to select "viewON synopsis" in the Combo box and enter the name of the synopsis in the Text box. If your default home page is a classical HTML page, you need to select "http://your_device_ip/usr" in the Combo box and enter the name of the page in the Text box.
Enable user page security	If a user web site is defined, then default user logon page is not displayed and there is no session, but using Basic Authentication can also ensure security. This checkbox will enable the security when the user wants to access a user-defined page.

Table 5: eWON Identification controls

After having encoded your parameters, go to the bottom of the page to  .

3.3.1.2 Alarms (globals parameters)

Figure 11: eWON system general setup - Alarms

Control	Description
Action retrig interval	If an alarm is still present after this interval, then a new action on alarm will be triggered once (only if the alarm condition is still true AND if the alarm has not been acknowledged yet). The default value for this parameter is one day (86400 seconds).
Try action	This parameter defines the number of times the action will be retried in case of errors. The value of this number must be greater than 1.
Action retry interval	This parameter defines the interval between two actions attempts if an error occurs. The value for this parameter must be greater than 10.

Table 6: global alarms controls

After having encoded your parameters, go to the bottom of the page to .

3.3.1.3 Date & time

Figure 12: eWON system Date & time setup

The eWON's real time clock can be updated manually with this dialog window. Fill in the edit box with date and time and click on .

An event will be added to the event log indicating the time update and the time offset between old and new time.

Important: Updating the time may result in duplicate points stored in non-chronological order in the eWON files (alarms, events and historical).

3.3.1.4 Reboot

Rebooting eWON is sometimes necessary (i.e. to validate some configuration changes).

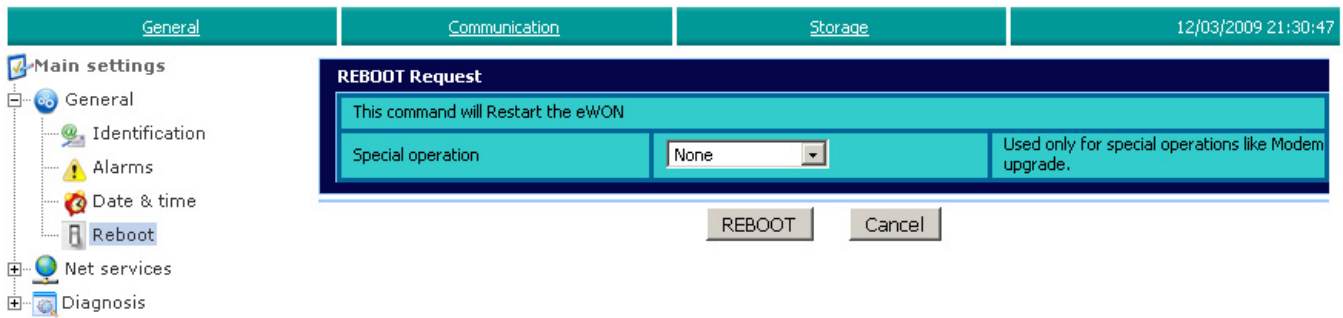


Figure 13: eWON system Reboot

eWON version 5 offers three ways to perform a reboot:

- From the **Reboot** menu from **General** configuration page
- By using the "REBOOT" Basic command (see eWON programming Manual).
- From the **Reboot** menu from **Storage** configuration menu (on page 66)

You will have to wait that the eWON comes back to its normal state after restarting to get access to it again.

Some special operation like "Upgrade the firmware of the Modem" requires a reboot with the BootOp parameter set to a specific value. Use the Special operation field to select the BootOperation to do. Now, only the *Modem Upgrade* value is available.

3.3.2 Net services setup

Regarding its Internet connectivity features, the eWON has basically two modes of operation:

- **A server mode (Web server and FTP server)**
- **A client mode (Email client, FTP client and NTP client)**

In the server mode, the eWON is waiting for a client to connect with its Web browser or with its FTP client.

In the client mode, the eWON needs to connect to a server. For this connection, you should at least know the IP address of the server and the Port number for the required service. Sometimes a username and a password are also required.

Note: Except in some special cases, the Port number is usually the default value proposed by the eWON. This setup section is used to define the eWON's CLIENT MODE configuration.

3.3.2.1 Virtual Com Port Setup (VCOM)

3.3.2.1.1 Introduction

VCOM (or more precisely « Virtual COM port ») is a technology that consists in using the eWON's serial port as if it was a standard COM port of a PC running Windows.

Actually, a software is installed on the PC; this software is a kind of driver that simulates additional COM ports on your PC. The PC is communicating with the eWON and the eWON serial port outputs all data transferred through the PC virtual serial port. The PC virtual port receives all data received by the eWON's serial port.

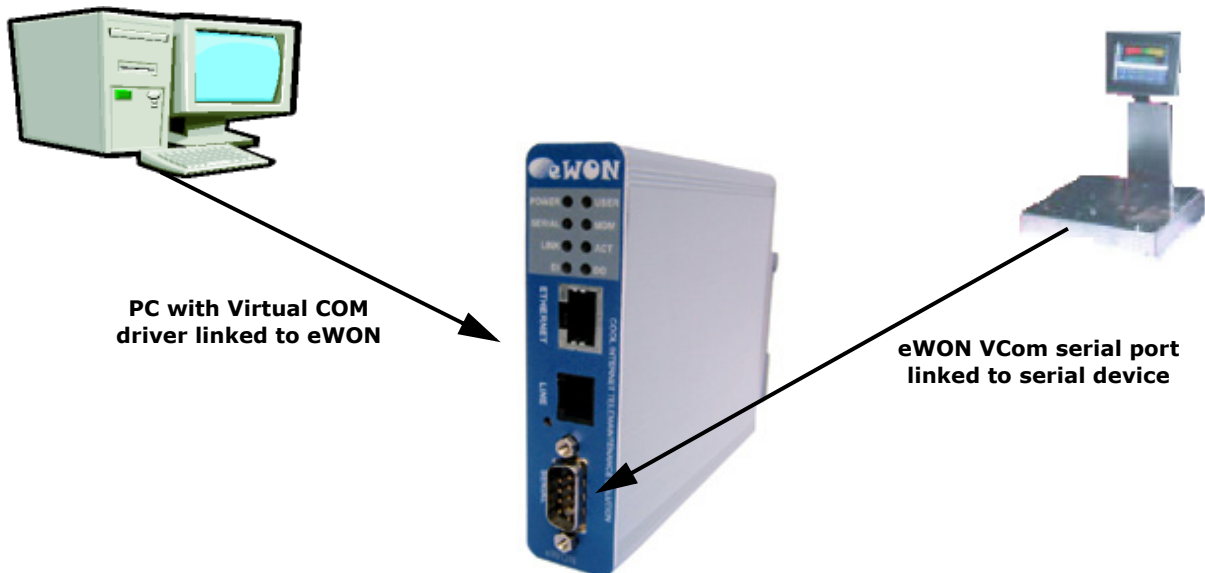


Figure 14: Virtual COM Port link used to read data on serial devices through eWON

The eWON supports two kinds of VCOM mode and an additional mode which is not exactly classified as a VCOM mode although it has the same purpose.

3.3.2.1.2 RAW TCP

The first mode is called RAW TCP. This is a basic mode thanks to which the PC opens a TCP/IP socket to the eWON on a predefined port. This socket is used to exchange data from and towards the eWON's serial port.

The Serial port configuration (baud rate, parity, etc.) must be defined in the eWON's configuration. The serial port signals (RTS, DTR, etc.) are not exchanged between the PC and the eWON.

This mode can also be used to create simple TCP/IP applications that need to communicate through the eWON's serial port, as the only requirement is to open a TCP/IP socket on the eWON.

3.3.2.1.3 TELNET RFC2217

This is a more complex communication protocol between the PC and the eWON. In addition to the RAW mode this mode allows to control remotely the eWON's serial port. Every configuration change that is made to the PC virtual COM port is automatically applied to eWON serial port. For example if you open a HyperTerminal on the PC's virtual serial port and you change the serial port's baud rate, the eWON's serial port baud rate will change accordingly.

Another feature of the TELNET RFC2217 mode is its ability to change the modem line status. This means that the RTS/CTS, DTR, DCD (etc.) levels of the eWON's physical port are reflected to the PC virtual port and vice-versa.

This protocol is called TELNET RFC 2217 because it has been standardized and described in an RFC specification. It means that any client supporting the RFC2217 protocol can use the eWON as a virtual port server.

3.3.2.1.4 MODBUS/TCP MODBUS/RTU Gateway

Although it is possible to use this technology to transfer almost any type of data through the virtual serial port, some protocols require special handling for efficient operation. ModbusRTU is one of these protocols and VCOM technology does not apply well to that protocol. For Modbus RTU communication it is recommended to use the MbsTcpCOM software and use the eWON as a ModbusTCP to ModbusRTU gateway.

3.3.2.2 PC Virtual COM Port driver

There are different options for creating virtual serial ports on the PC side.

3.3.2.2.1 MbsTcpCOM

This software provided by eWON s.a. is used to create ONE virtual COM port on the PC, the virtual COM port must only be used by softwares that are supposed to communicate on the PC serial port in ModbusRTU.

The ModbusRTU slave is actually connected to the eWON's serial port. The PC software believes that it is "talking" directly to the device through its serial port while it actually "talks" to its virtual serial port that transfers all the data to the eWON by translating every requests into ModbusTCP (without interpreting them).

This software is downloadable for free from <http://www.ewon.biz>.

3.3.2.2.2 Serial/IP

Tactical Software provides this software: <http://www.tactical-sw.com>

This software is not for free. It can be purchased directly from the Tactical software website.

An 30 days-evaluation version is available for download from this site.

The software supports both RAW TCP and Telnet RFC 2217 modes and works on all Windows version from Windows 95 to Windows XP.

The software can create up to 256 virtual serial ports that communicate with multiple eWONs.

3.3.2.3 eWON VCOM Configuration

3.3.2.3.1 Introduction

All serial ports can be used for VCOM.

Depending on the eWON type, you have 1, 2 or 4 serial ports.

The COM1 is always the serial port 1 of the eWON.

The COM2 is always the MODEM port (even if there is no modem present on your eWON, the COM2 exists but is useless).

The COM3, if present, is linked to the serial port 2 (SER2), the full RS-232 port on eWON4002.

The COM4, if present, is linked to the serial port 3 (SER3).

As COM2 is the modem, it should only be used for debug purposes because when the port is used by VCOM it is not available to PPP or SMS communication.

3.3.2.3.2 Web configuration

You get access to the COM1 (or COM2) VIRTUAL PORT CONFIGURATION page by following this path from the **Main Menu** navigation bar:
Configuration/System Setup/General/Net services/Virtual Com :

Figure 15: eWON Virtual COM port configuration page

You may first choose the COM port you want to configure in the **COM Port**: scrolling menu. You can then define the following parameters:

Control	Description
Port Type	If Disabled is selected, then VCOM will not be used on this port.
TCP Port	The PC will have to connect to that TCP/IP port to communicate through the eWON serial port. REM: if multiple VCOM are defined on the same eWON, they must all use a different TCP/IP port.
Poll Signal Interval	This parameter is only used in TELNET RFC2217 mode. In that mode the eWON will scan the modem port for changes in modem line input levels (CTS, DSR, DCD, RING) thus this parameters defines the scan rate. The default value of 100msec should be fast enough for most applications.
Debug	Activate the recording of debug info for VCOM. When activated, this function slows down the overall performance of the eWON. All debug info will be accessible in the Diagnostic->Real Time Log menu.
Always accept new clients	When a PC is connected to the eWON, then a socket is opened by the PC to the eWON. If for example the PC suddenly switches off, the eWON will not know that the socket should be closed, and when the PC will try to connect again, the eWON will refuse the connection. This option is provided in order to avoid that situation; when checked, the eWON will always be ready for a new connection, and the new connection will replace the previous connection. This means also that if one PC is connected to the VCOM port, and that another PC tries to connect with this option checked, the new PC connection will be accepted and the existing PC connection will be closed.
Inactivity Timeout	There is another way to avoid that an unused but opened socket prevents access to the eWON (if the previous option has NOT BEEN checked). If you set this option with a value different of 0, then the eWON will close its VCOM socket if there is no communication for a given amount of time. If serial communication is supposed to occur all the time this option can be useful, but if silence in communication is expected, then this option will obviously not apply.
Line parameters	Except for HW Mode , which is an "hardware parameter" (only configurable in the eWON), these parameters are only used when the port is configured in RAW TCP mode, because in TELNET RFC2217 mode the PC virtual port will usually change them. In any case, this will define the initial or default values.
HW Mode	Hardware Mode represents the hardware behavior of the serial link. Available values are : <ul style="list-style-type: none"> • HalfDuplex • FullDuplex with HardWare handshaking (default) • FullDuplex with NO handshaking REM: This mode cannot be controlled remotely by RFC 2217

Table 7: eWON virtual COM port configuration controls

When using modem port for VCOM, the following must be considered:

- Modem serial port is normally owned by PPP:
- If an SMS transfer is in progress and a VCOM client tries to connect, the VCOM connection will fail.
- If a VCOM client is connected, and an SMS must be sent, the SMS sending will fail.
- When an SMS transfer or a VCOM connection ends, the PPP is again the owner of the modem serial port.

3.3.2.4 SMTP (mails) setup

Figure 16: eWON setup SMTP page

Control	Description
SMTP server address	The IP address of the SMTP server which the Email notification will be sent to. Put SMTP server IP address. If you only know the name of the SMTP server (like smtp.domain.com) see the chapter "Finding the IP address of a given host" on page 200. Note that it is possible to send mails towards an Exchange server when eWON is located inside an Intranet, providing the IMC (Internet Mail Connector) ad-in is installed on the Exchange Server, and this service is configured to accept incoming mails sent by the eWON.
SMTP Server port	Usually the value is 25. In case of doubt, contact your Internet provider or your Network Administrator to check it.
Email "From" User name	The name of the eWON Email account. For instance: ewon@compuserve.com. Will appear in the FROM field of the message sent.
User name	SMTP AUTHENTICATION: insert here the user name. (leave empty if no authentication is required)
Password	SMTP AUTHENTICATION: enter here the password. (leave empty if no authentication is required)

Table 8: eWON SMTP controls

After having encoded your parameters, go to the bottom of the page to .

3.3.2.5 NTP (time) setup

Figure 17: eWON NTP setup page

Control	Description
Enable NTP clock update	To update the eWON date & time the eWON is able to make a connection automatically on a NTP (Network Time Protocol) timeserver. If you want to use that functionality, check the box and fill the next edit boxes in.
NTP server address	The IP address of the NTP (Network Time Server Protocol) server. You can easily find a list of NTP servers by using any Web search engine. If you are working on your own network without a real connection to Internet, we recommend NTP server software http://www.haytech.com.au/TimeServer/TimeServer.htm . If you only know the name of the NTP server (like canon.inria.fr) see the chapter "Finding the IP address of a given host" on page 200. Note: eWON does not consider the DST data (Daylight Saving Time).
NTP Server Port	Usually 123. In case of doubt, contact your Internet provider or your Network Administrator to check it.
GMT Offset	Enter here the offset in hours between your local time zone and the GMT time zone. This information is required for correct automatic time update.
Update Time Interval	Interval in minutes for automatic connection to the NTP Server. Default is 1440= 1 day.

Table 9: eWON NTP controls

After having encoded your parameters, go to the bottom of the page to .

3.3.2.6 FTP setup

Figure 18: eWON FTP setup page

Control	Description
FTP server address	The name of the FTP server the Put FTP command is issued from (alarm action or Script direct PUTFTP command). Enter FTP server IP address. If you only know the name of the FTP server (like domain.com) see the chapter "Finding the IP address of a given host" on page 200.
FTP server port	Usually the value is 21. In case of doubt, contact your Internet provider or your Network Administrator to check it.
User name	The FTP client user name defined on the FTP server.
Password	The password for the given FTP client.
Use Passive Mode	When checked, all FTP transactions are performed in passive mode.

Table 10: eWON FTP setup controls

After having encoded your parameters, go to the bottom of the page to .

3.3.2.7 SNMP Setup

Figure 19: eWON SNMP setup main menu page

3.3.2.8 Communities

The communities are defined here. These are acting like a "login-password" feature. Please refer to the SNMP standard for detailed explanations. Up to five different communities can be set up in the eWON. Each community has different read and write attributes. In the eWON, each of them can be specified for read and/or write rights. The standard *public* community is defined as read-only.

3.3.2.9 Hosts

The hosts that can access the communities and/or receive the generated SNMP traps have to be specified. If the checkbox *Accept SNMP from any host* is selected, any IP address will be granted to browse the SNMP tree of the eWON.

The traps are always sent to know IP addresses defined in the following fields. Each host is determined by its IP address and by the community he is working on. For each host, the user can specify whether he can receive traps and/or browse the SNMP tree.

A MIB file describing the SNMP structure and OID of the eWON is available on our web site.

Traps can originate from three different events:

System traps	At cold boot and at soft reboot, the eWON sends system traps with identification 0 and 3 respectively.
Basic scripting traps	The <i>sendtrap</i> Basic function can send a trap at user request.
Alarm event traps	The eWON automatically sends a trap on alarm, containing alarm information.

Table 11: events that generate a SNMP trap

The parameters for Basic traps are as follows:

Param 0	Text string [0...255]
Param 1	Integer 32bits

Table 12: Basic SNMP traps parameters

The parameters for Alarm traps are as follows:

Param 0	Tag name	(Text [0..63])
Param 1	Alarm message	(Text [0..255])
Param 2	Value of the Tag in alarm	(Integer 32bits)
Param 3	Alarm status	(Integer)
Param 4	Alarm Type	(Integer)

Table 13: Alarm traps parameters

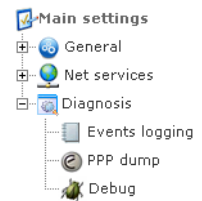
3.3.3 Diagnosis

3.3.3.1 Overview

This part of eWON configuration allows you to fine-tune the way you monitor the eWON, concerning the **events**, that gives the user the ability to diagnose quickly and efficiently any trouble that could happen.

The second choice in the **Diagnostic** menu is **PPP Dump**, which allows you to log the history of any PPP communication to and from eWON.

Since Firmware 5.4s4, a **Debug** page allows the activation of debug information for Serial Ports or ADSL.



3.3.3.2 Events logging

Event logging Configuration gives you the ability to define the reporting level you want to get a diagnostic from most important part from eWON's features.

The three different reporting levels that can be defined are:

Trace	The events with level "Trace", "Warning" and "Error" will be logged
Warning	The events with level "Warning" and "Error" will be logged
Error	Only the critical events will be logged

Table 14: reporting levels - explanations

Warning: If for example you define the "Error" reporting level for "IP communication", then you won't be able to retrieve the reporting information concerning the "Warning" and "Trace" levels in the events log file. This means that you have to know exactly what are the eWON features you want to keep an eye about potential issues or not.

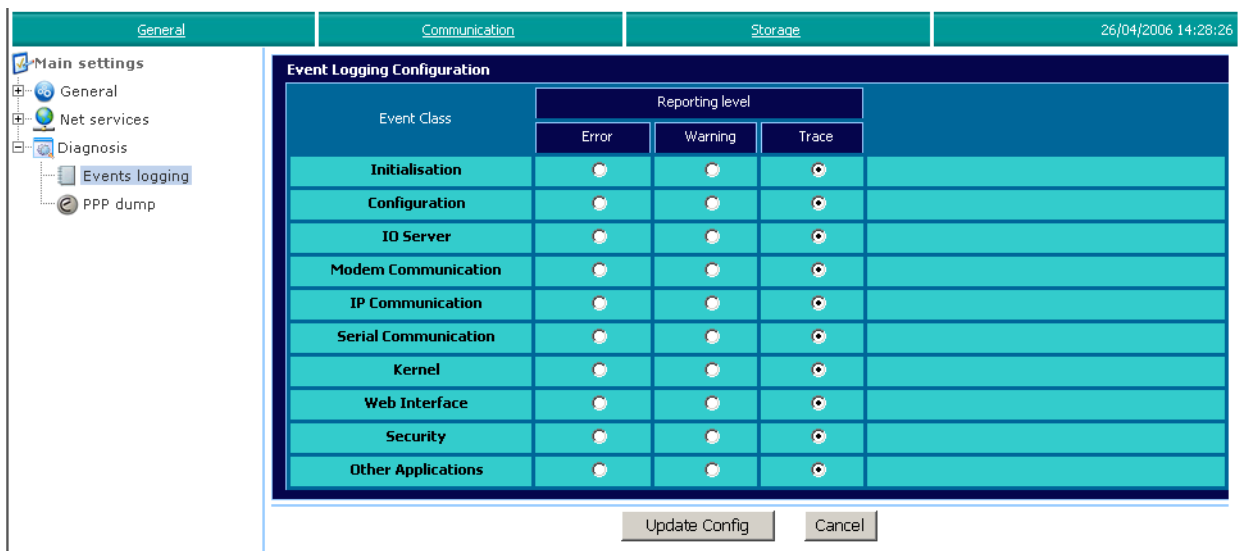


Figure 20: Event logging configuration page

Control	Description
Initialisation	Allows you to define the level of monitoring about the events concerning the eWON boot.
Configuration	Allows you to define the level of monitoring about the events concerning the eWON configuration.
IO Server	Allows you to define the level of monitoring about the events concerning the IO Servers that eWON manages.
Modem Communication	Allows you to define the level of monitoring about the events concerning the eWON's modem communications (incoming and outgoing).
IP Communication	Allows you to define the level of monitoring about the events concerning the eWON's IP communications.
Serial Communication	Allows you to define the level of monitoring about the events concerning the eWON's serial communications.
Kernel	Allows you to define the level of monitoring about the events concerning the eWON's kernel.
Web Interface	Allows you to define the level of monitoring about the events concerning the eWON's Web Interface.
Security	Allows you to define the level of monitoring about the events concerning the eWON's security.
Other Applications	Allows you to define the level of monitoring about the events concerning the eWON's features that are distinct from all the one that are listed above in this table.

Table 15: events logging configuration controls

3.3.3.3 PPP Dump

WARNING: depending on the eWON's version (c.f. Table 187 on page 203)

WARNING: this configuration is volatile, which means that the dump.ppp file will be cleared each time that the eWON is rebooted.

The *dump.ppp* file containing the logged data can be used in the following ways:

- it can be sent as an attachment to an e-mail or by using the \$dtPP Export Block Descriptor
- it can be found in the eWON FTP root and then downloaded locally or on another FTP folder
- it can be opened and analyzed by using EtherReal, which is a tool used to analyze TCP frames (<http://www.ethereal.com/>)

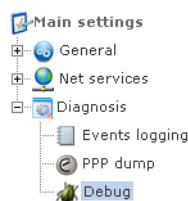
3.3.3.3.1 PPP Dump Configuration

Figure 21: PPP Dump configuration page

Control	Description
Log Incoming call	Logs communications when the eWON is acting as a PPP server
Log Outgoing call	Logs communication when the eWON is acting as PPP Client (connects to a server)
Log Size (bytes)	Number of bytes allocated for logging PPP communications. When the log is full, logging stops (this does not prevent communication from continuing) Maximum log size is 1MByte (Log Size between 50000 and 100000 are sufficient for debug purpose)
Append to log	Prior to append to log, you must clear log manually using the Clear Log button in the PPP Dump configuration page
Log following connections	The eWON will log only the N next connections, the number of connections will be decreased each time a new connection is logged. When the last connection has been logged, then the counter will be set to -1 (to prevent further connections to be logged). When the value of this counter is 0, then all connections are logged. You can manually set the counter to -1, in order to suspend connection logging, but if you want to release the log buffer, then you should disable the Log Incoming call and the Log Outgoing call options. In case you want to log multiple connections, you can choose to Append data to the log or not.
clear log now	Clicking on this button will clear the PPP dump log.

Table 16: PPP dump configuration controls

3.3.3.4 Debug



Debug configuration

Serial communication

WARNING: All these settings may affect system performance, use for debug only!

Debug COM 1: HEX and ASCII (no timeout)

Debug COM 2: No debug

Other Settings

Debug ADSL: ☒ Trace ADSL process in real time log.

Error Debug: ☐ Append hex location data to logged events.

Update Cancel

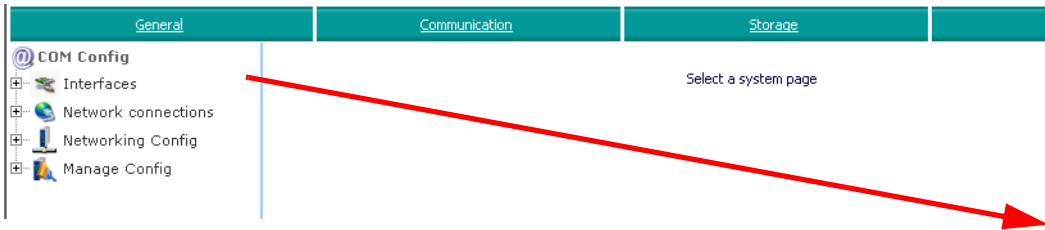
Figure 22: Debug configuration page

Control	Description
Debug COM (1..4)	Set the debug mode of the Serial COM ports (1 to 4 depending of the eWON type). All the debug information will be available in the Real Time Log page (See "Real Time Log" on page 161) Choose between following mode: <ul style="list-style-type: none"> • No debug: no debug information logged (default) • HEX on RX/TX: Log hexadecimal data received and transmitted • HEX and ASCII on RX/TX: Log hexadecimal and ASCII data received and transmitted • HEX and ASCII (no timeout): Log hexadecimal and ASCII data received and transmitted, without timeout information (clearer log)
Debug ADSL	Only available on eWON2104 or eWON4104. Log ADSL trace in the ADSL log page (See "ADSL Log" on page 163)
Error Debug	Append hex location data to logged events

Table 17: Debug configuration controls

3.3.4 COM Setup section

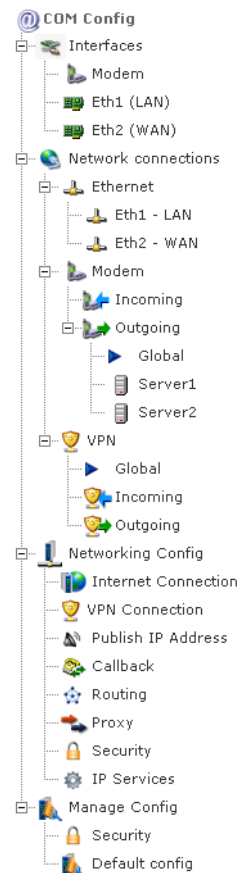
Warning: depending on eWON's version (c.f. Table 187 on page 203)



The second link of the **System setup** is the communication setup. All Ethernet, modem and PPP TCP/IP connectivity parameters are defined here.

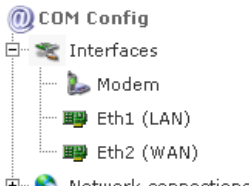
The tree menu is divided into 4 sub-menus, which classifies the COM setup into functional systems: **Interfaces**, **Network connections**, **Networking Config** and **Manage Config**.

Once totally expanded, the tree menu looks like the one shown on the right.



- **Important:** This COM configuration is not saved in the eWON flash file system, it means that formatting the eWON will not erase this configuration. This allows formatting the eWON remotely and ensuring that communication is still possible after formatting. Nevertheless, the *Default Config* menu allows the user to return to default well known communication values.

3.3.4.1 Interfaces setup



The Interfaces menu groups the hardware configuration of the means of communications.

These interfaces are:

- the **Modem** (optional)
- the **Ethernet-1-LAN** (always present)
- the **Ethernet-2-WAN** (only on eWONx005 & eWONx005CD)
- the **ADSL** (only on eWONx104)

Therefore, eWON will show you only the interfaces available on your device.



3.3.4.1.1 Modem setup page

Warning: depending on the eWON's version (c.f. Table 187 on page 203)

3.3.4.1.1.1 Modem configuration (PSTN modem)

This tab contains the Modem setup of the eWON and stands in a distinct page from Dialup Setup since version 4. Its appearance differs depending on the type of modem that the eWON embeds; if a PSTN modem, then the modem settings page will only contain the **Modem Init String** field (see figure below):

Figure 23: Modem settings for eWON with PSTN modem

Control	Description
Modem Detected	Textual description of the eWON internal modem detected, if available. The text that is displayed is always " <i>Internal</i> ", followed by the modem type or speed (i.e. "Internal 56K" in the screenshot above).
Modem Init String (Basic Part)	This string is used to configure and to initialize the modem. Any change in this string could prevent communications to succeed, for that reason only qualified users should modify this string. It can be useful to modify this string i.e. if you install eWON in a country where the telephone network is different than in your country Clearing this string will result to applying a well known default initialization string (after you have validated your choice by clicking on the Update button).

Table 18: eWON PSTN modem settings controls

3.3.4.1.1.2 Modem configuration (GSM/GPRS modem)

If eWON embeds a GSM/GPRS modems, then the modem page will have a very different look:

Figure 24: Modem settings for eWON with GSM/GPRS modem

Control	Description
Modem Status	
Modem Detected	Textual description of the eWON internal modem detected, if available. The text that displays is always "Internal", followed by the modem type or speed (i.e. "Internal MUTLIBAND GSM" in the screenshot above).
Signal Level	Indicates you the current signal level for your GSM/GPRS communication. This signal range must be between 20 and 31 (signal levels lower than 18 could work, but the communications could be slower or even interrupted). Check your local environment and your antenna isolation/power if you get a 0 or a 99.
Network	This field indicates if you are able to connect to the GSM/GPRS network. You should read "Home network" in order to communicate safely.
Operator	Displays the currently selected GSM operator used.
Modem Config	
Modem Init String (Basic Part)	This string is used to configure and to initialise the modem. Any change in this string could prevent communications to succeed, only qualified users should modify it. Clearing this string will result to applying a well known default initialisation string (after you have validated your choice by clicking on the Update Modem Settings button).
Operator selection	Combo box to choose (force) a GSM operator. The combo will show all the available GSM operator and an "Automatic" settings. Default setting is Automatic.
Display Level on led	If this option is selected, the modem led will display the signal level as described in "GSM modem Led behavior" on page 205 The modem led default behavior is to go solid red when a PPP is established and off otherwise.
GSM PIN Code (reboot required)	Enter here the currently valid PIN code on the SIM card that you have inserted in eWON. Let empty if your SIM card doesn't require a PIN code. This PIN code will be taken in account only after you have power OFF/power ON eWON.

Table 19: GSM Modem configuration controls

note: Unused parameters are hidden. You must check the Enabled checkbox to expand the parameters

General	Communication	Storage	18/04/2008 14:07:06
COM Config Interfaces Modem Eth1 (LAN) Network connections Networking Config Manage Config			
MODEM			
Status			
Modem Detected	Internal MULTIBAND GSM		
Signal Level	31		
Network	Home network		
Operator	B mobistar	(NB: B mobistar = 20610)	
Config			
Modem Init String	AT&FE0&D2&C1+IFC=2,2;+CSN5=	clear this line to restore default value	
Operator selection	Automatic		
Display Level on led	<input checked="" type="checkbox"/>		
GSM PIN Code	*****		
GPRS Configuration			
PDP context definition		<input checked="" type="checkbox"/> Enabled	
Access Point Name	web.pro.be	WARNING: case sensitive	
Quality Of Service Profile (Requested)		<input checked="" type="checkbox"/> Enabled	
precedence	0: Subscribed		
delay	0: Subscribed		
reliability	0: Subscribed		
peak	0: Subscribed		
mean	0: Subscribed		
Quality Of Service Profile (Minimum Acceptable)		<input checked="" type="checkbox"/> Enabled	
precedence	0: Subscribed		
delay	0: Subscribed		
reliability	0: Subscribed		
peak	0: Subscribed		
mean	0: Subscribed		

Figure 25: Modem settings for eWON with GSM/GPRS modem (all parameters)

GPRS Settings	
<p>In order to generate a GPRS outgoing communication, the user must choose "GPRS" in the Connection type field from the Outgoing Calls config part from the Dial Up Configuration page, see chapter "Primary & secondary servers" on page 40.</p> <p>Notes:</p> <ul style="list-style-type: none"> • Each part of the GPRS configuration can be enabled or not. • If your GPRS provider requires authentication when login in the GPRS network, the login and password must be entered in the Dial Up Configuration page, see chapter "Primary & secondary servers" on page 40. • Some network operators use authentication to identify the mobile phone connecting to their GPRS network. 	
PDP context definition	Packet Data Protocol Context Must be enabled in order to use GPRS connection.
Access Point Name (APN)	Enter the Internet address of your access point. Contact your GSM service provider to know your APN.

Table 20: eWON GPRS main settings controls

Quality Of Service Profile (Requested)	
Check with your network operator before changing any of the QoS (Quality of Service) settings. The settings Precedence, Delay, Peak rate, Reliability and Mean Rate are all set by default to "Subscribed", which means that your operators default QoS (Quality of Service) values will be applied.	
precedence	a numeric parameter which specifies the precedence class
delay	a numeric parameter which specifies the delay class
reliability	a numeric parameter which specifies the reliability class.
peak	a numeric parameter which specifies the peak throughput class
mean	a numeric parameter which specifies the mean throughput class
Quality Of Service Profile (Minimum Acceptable)	
precedence	a numeric parameter which specifies the precedence class
delay	a numeric parameter which specifies the delay class
reliability	a numeric parameter which specifies the reliability class.
peak	a numeric parameter which specifies the peak throughput class
mean	a numeric parameter which specifies the mean throughput class

Table 21: eWON GPRS quality of services (QOS) settings controls

3.3.4.1.1.3 Modem configuration (ISDN)

Figure 26: Modem settings for eWON with ISDN modem

Control	Description
Modem Detected	Textual description of the eWON internal modem detected, if available. The displayed text is always " <i>Internal ISDN</i> ".
Modem Init String (Basic Part)	This string is used to configure and to initialize the modem. Any change in this string could prevent communications to succeed, for that reason only qualified users should modify this string. Clearing this string will result to applying a well known default initialization string (after you have validated your choice by clicking on the Update button).
Multiple Subscriber Number (MSN)	Use this field to encode the phone number which you want the eWON answer. Leave the field empty (default) to answer all the phone numbers of this ISDN line.

Table 22: eWON ISDN settings controls

3.3.4.1.1.4 PSTN: Leased line configuration

PSTN modem types MT5634SMI-xx have the ability to work in Leased Line mode.
In this mode, you are able to connect by phone two eWONs with simple wires.
The two eWONs must have a MT5634SMI-xx modem.

One side acts as the client and you must insert the LLCLT command in the init string.
The other side acts as the server and you must enter the LLSRV command in the init string.
The init string MUST start by LLCLT or LLSRV for LeasedLine mode operation but the init string can continue with other parameters.

Example:

LLSRV;AT&FE1&Q5&K3&D2&C1

Or:

LLSRV

or

LLCLT

or

...

The link is established by the CLIENT. This eWON Client can be configured with following parameters:

Modem Init String	LLCLT
Call direction allowed	Outgoing Only
Primary Server ' Phone number	0
Primary Server ' User Name	adm
Primary Server ' Password	adm

Note: Username and password of an user on the eWON Server.

The eWON Server can be configured with following parameters:

Modem Init String	LLSRV
Call direction allowed	Incoming Only

- When the dial-out occurs, it takes up to 2 minutes to synchronize both eWONs.
- The Server modem leased line (LLSRV) cannot generate outgoing calls, or it would generate an error.
- The Client modem leased line (LLCLT) cannot receive incoming calls.

3.3.4.1.1.5 ADSL interface

The eWON ADSL modem supports the ADSL2+ standard.

The configuration is very simple and provides compatibility with PPPOE and PPPOA with VCMux and LLCMux implementations.

When the ADSL modem is connected, the eWON will have a WAN interface connected to the Internet, it will be able to act as a gateway on the Internet and will be accessible from Internet on any port.

The screenshot shows the 'ADSL Interface' configuration window. The 'Connection Type' is set to 'PPPoE or PPPoA'. The 'User name' and 'Password' fields are empty. The 'PPP Mode' is set to 'PPPoE LLC'. The 'VPI' is set to '8' and the 'VCI' is set to '35'. An 'Update' button is located at the bottom right of the configuration area.

Figure 27: ADSL interface settings

Control	Description
Connection Type	Always "PPPoE or PPPoA" PPPoE: Point-to-Point Protocol over Ethernet PPPoA: Point-to-Point Protocol over ATM
User name	Provided by the operator with your ADSL account
Password	Provided by the operator with your ADSL account
PPP Mode	Provided by the operator with your ADSL account. Choose between <ul style="list-style-type: none"> • PPPoE LLC • PPPoA VC-Mux • PPPoA LLC
VPI	Virtual Path Identifier is provided by operator (default: 8)
VCI	Virtual Channel Identifier is provided by operator (default: 35)

Table 23: ADSL interface settings controls

3.3.4.1.2 Ethernet LAN & WAN

From the hardware point of view, there is nothing to configure on the Ethernet interfaces. You find here the MAC address of the Ethernet Interface.

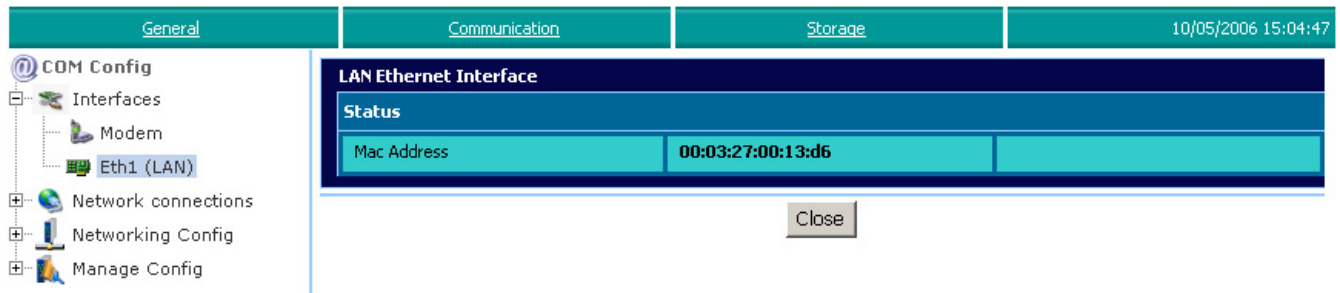
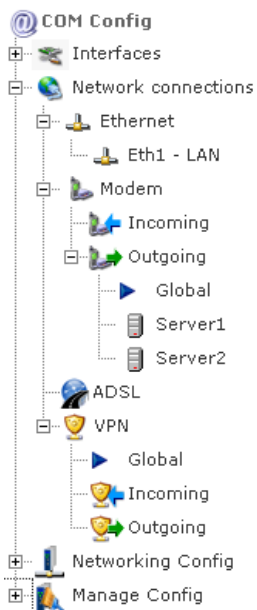


Figure 28: Ethernet Interface info page

3.3.4.2 Network connections



The "Network connections group" handle all the software parameters of yours connections.

You can configure here:

- IP parameters of your(s) Ethernet(s) connection(s)
- Incoming and Outgoing connections of your Modem
- ADSL global connection parameters
- Incoming and Outgoing VPN parameters

3.3.4.2.1 Ethernet LAN (& WAN)

3.3.4.2.1.1 General

This tab contains the Ethernet setup of the eWON.

Figure 29: Network connections: Ethernet setup

An ethernet interface needs the following parameters:

Control	Description
Address Setup	
Ethernet IP address	IP address of the eWON on the LAN (or WAN) side. Use this IP address to connect to the eWON using a LAN (or WAN) connection. These are 4 numbers from 0 to 255 separated by dots.
eWON Ethernet IP mask	eWON Ethernet subnet mask, used to determine the address range of the LAN (or WAN) connection (your network).
Ethernet IP gateway	eWON Ethernet server gateway, which is the IP address used to forward information to other networks. note: See also "Ethernet Gateway behavior" on page 49
DNS Setup	
Primary DNS IP address	IP address of the primary Domain Name Server of your domain or ISP provider. These are 4 numbers from 0 to 255 separated by dots,
Secondary DNS IP address	IP address of the secondary Domain Name Server of your domain or ISP provider. These are 4 numbers from 0 to 255 separated by dots
DHCP config	
Network Name	On the DHCP network, you can also access your device by name instead of IP address. Thanks to the DNS Synchronisation (RFC 4702), this <i>Network Name</i> (also called Fully Qualified Domain Name, or FQDN) is sent to the DHCP server during DHCP request negotiation and will trigger an update of the DNS server. <i>Network Name</i> can only contains characters a-z,-,0-9

Table 24: Ethernet setup configuration page

The Ethernet LAN and WAN interfaces can receive their IP address configuration from various mechanisms:

- **Static:** the user enters all parameters
- **BootP:** a BootP server provides some parameters
- **DHCP:** a DHCP server provides all parameters

You select the IP address configuration mechanism with the combo box

Each mechanisms provides you all or some of the IP parameters.

IP parameters	Static	BootP	DHCP
IP Address	X	X	X
IP Mask	X	X	X
Default Gateway	X	(*)	X
DNS (primary and secondary)	X	(*)	X (optional)
Network Name	not applicable	not applicable	X

Table 25: IP parameters provided by IP configuration mechanisms

(*) this parameter must be configured statically.

(optional) this parameter can be configured by the Server or statically

On the eWON the *Default Gateway* and *DNS* belong to one interface only:

- the LAN for eWON with one ethernet interface
- the WAN for eWON with two ethernet interfaces

Depending on the eWON type, the LAN and WAN interfaces will show you the parameters that you are allowed to set manually. The other parameters are greyed.

On eWONs with one ethernet interface (other than 2005 or 4005), the LAN configuration page will be one of the following:

Static	BootP	DHCP
Ethernet LAN Connection Address Setup Static IP address: 10.0.120.71 Subnet mask: 255.255.0.0 Default gateway: 10.0.0.254 DNS Setup Primary DNS IP address: 0.0.0.0 Secondary DNS IP address: 0.0.0.0	Ethernet LAN Connection Address Setup BootP IP address: 10.0.120.71 Subnet mask: 255.255.0.0 Default gateway: 10.0.0.254 WARNING: if BOOTP server is NOT present, use button to unlock eWON DNS Setup Primary DNS IP address: 0.0.0.0 Secondary DNS IP address: 0.0.0.0	Ethernet LAN Connection Address Setup DHCP IP address: 10.0.5.90 Subnet mask: 255.255.0.0 Default gateway: 10.0.0.254 DNS Setup <input checked="" type="checkbox"/> Via DHCP Primary DNS IP address: 10.0.0.13 Secondary DNS IP address: 0.0.0.0 DHCP Config Network name: ewon71

Table 26: One ethernet : LAN configuration pages

On eWON with two ethernet interface (eWON2005 or 4005), the LAN configuration page will be one of the followings:

Static	BootP	DHCP
Ethernet LAN Connection Address Setup Static IP address: 10.0.120.125 Subnet mask: 255.255.0.0	Ethernet LAN Connection Address Setup BootP IP address: 10.0.120.125 Subnet mask: 255.255.0.0 WARNING: if BOOTP server is NOT present, use button to unlock eWON	Ethernet LAN Connection Address Setup DHCP IP address: 10.0.120.125 Subnet mask: 255.255.0.0 DHCP Config Network name: ewon125

Table 27: Two ethernet : LAN configuration pages

On eWONs with two ethernet interfaces (eWON2005 or 4005), the WAN configuration page will be one of the followings:

Static	BootP	DHCP
<div>Ethernet WAN Connection</div> <div>Address Setup Static</div> <div>IP address <input type="text" value="10.1.0.53"/></div> <div>Subnet mask <input type="text" value="255.255.255.0"/></div> <div>Default gateway <input type="text" value="10.1.0.1"/></div> <div>DNS Setup</div> <div>Primary DNS IP address <input type="text" value="0.0.0.0"/></div> <div>Secondary DNS IP address <input type="text" value="0.0.0.0"/></div>	<div>Ethernet WAN Connection</div> <div>Address Setup BootP</div> <div>IP address <input type="text" value="10.1.0.53"/></div> <div>Subnet mask <input type="text" value="255.255.255.0"/></div> <div>Default gateway <input type="text" value="10.1.0.1"/></div> <div>WARNING: if BOOTP server is NOT present, use button to unlock eWON</div> <div>DNS Setup</div> <div>Primary DNS IP address <input type="text" value="0.0.0.0"/></div> <div>Secondary DNS IP address <input type="text" value="0.0.0.0"/></div>	<div>Ethernet WAN Connection</div> <div>Address Setup DHCP</div> <div>IP address <input type="text" value="10.1.0.53"/></div> <div>Subnet mask <input type="text" value="255.255.255.0"/></div> <div>Default gateway <input type="text" value="10.1.0.1"/></div> <div>DNS Setup <input checked="" type="checkbox"/> Via DHCP</div> <div>Primary DNS IP address <input type="text" value="0.0.0.0"/></div> <div>Secondary DNS IP address <input type="text" value="0.0.0.0"/></div> <div>DHCP Config</div> <div>Network name <input type="text" value="ewon125"/></div>

Table 28: Two ethernet : WAN configuration pages

IMPORTANT: Since firmware 5.4, on eWON with 2 ethernet interfaces, the WAN ethernet interface is disconnected by default.
See "WAN/LAN/PPP interface management" on page 47

3.3.4.2.1.2 BootP : TCP/IP Bootstrap Protocol

You can force eWON to ask its IP address to a BootP Server.
Only the IP address and network mask are given by the BootP server.

To correctly set the IP address and mask, your BootP server must comply with the RFC-1048.

At each startup, the eWON will receive its IP address from the BootP Server.

The eWON will wait for the server unless it is already present.

The eWON will perform a new attempt at increasing interval (1 minute interval max.) endlessly.

While waiting for its IP address, the eWON is in startup phase and thus it is not functioning! During this time, the USER LED will blink continuously with the following pattern:

short red light + pause + long green light + pause

Resolution:

- 1) Pushing on the Reset button (on the front side of the eWON) will skip the BootP request, then eWON will use the IP address which is configured in the Ethernet configuration page
The Duplicate IP test is skipped too!
- 2) Make a Second Level Reset (see chapter "Second level reset" on page 201) to force eWON to 10.0.0.53 IP address and to disable the BootP mechanism

eWON is now accessible.

3.3.4.2.1.3 DHCP : Dynamic Host Configuration Protocol

Configured on DHCP, the eWON gets all the IP parameters from the DHCP server.

These parameters are: the IP address, network mask, default gateway and the 2 DNS servers. The DNS servers can optionally be defined statically.

At the end of the DHCP request, the User Led will blink continuously with the following pattern during 2 seconds:

short red light + short pause

Note: If the eWON doesn't find any DHCP server, after 45 seconds, it will take the IP 169.254.0.53 with mask 255.255.0.0

3.3.4.2.2 Modem Incoming & Outgoing

Warning: Depending on the eWON's version (c.f. Table 187 on page 203)

This group contains the PPP(Point to Point) setup of the eWON that sets up the PPP settings for the server and client functions of the eWON engine.

3.3.4.2.2.1 Incoming

Tag Setup		System Setup		IO Server Config		Main Menu	
Script Setup		Users Setup		Pages List			
General		Communication		Storage		11/05/2006 10:27:28	

COM Config

- Interfaces
- Network connections
 - Ethernet
 - Modem
 - Incoming
 - Outgoing
 - Global
 - Server1
 - Server2
 - VPN
 - Networking Config
 - Manage Config

PPP incoming Connection			
<input checked="" type="checkbox"/> Server enabled			
PPP Server Setup			
eWON PPP server IP address	202.0.0.240		
PPP Client IP address	202.0.0.1		
Enable protocol compression	<input checked="" type="checkbox"/>		
Use incoming for outgoing	<input type="checkbox"/>	Connected client is a gateway	
Number of rings before modem answers	1	Default = 0	
Idle time before hanging up	240	sec	
Reset eWON if no incoming connection after...	0	Ho 0 = disable watchdog.	

Update

Figure 30: Modem Incoming setup page

Control	Description
eWON PPP server IP address	PPP server Internet protocol (IP) address of the eWON. Use this IP address to connect to the eWON using a RAS connection. These are 4 numbers from 0 to 255 separated by a dot.
PPP client IP address	Type the IP address that the eWON will allocate to the RAS client to establish the communication.
Enable protocol compression	Enables the compression negotiation request when an incoming call occurs. This includes all the compression modes known by the eWON PPP engine (Van Jacobson, header compression,...).
Use incoming for outgoing	When checked, this ensures that when an incoming call is undergoing, no external event, such as alarm Email, will drop the line in order to initiate a new connection. If an alarm has to be sent through the PPP connection (FTP, Email, ...), the current PPP link will be used. Be aware that SMS alarms will always drop the line, whatever the value of this checkbox. On the other hand, if this box is unchecked and an Email has to be sent while the connection has been established by a user to browse the eWON, if the Email can be sent through the Ethernet link, the PPP link will NOT be dropped. note: See also "Ethernet Gateway behavior" on page 49
Number of rings before modem answers	You can fix the number of rings before the eWON answers. Default value is 0.
Idle time before hanging up	After this amount of time without data transfer on the PPP link between the eWON (any type of PPP packet) and a remote host (Computer).
Reset eWON if no incoming connection after ...	Consider this parameter like a Watchdog parameter. To avoid eWON to stay stucked due to any modem reason or other, you can use this parameter to force an eWON to reboot if no incoming connection was performed after xxx Hours since the last connection.

Table 29: Modem Incoming controls

3.3.4.2.2.2 Outgoing

Global parameters

General Communication Storage 26/04/2007 10:55:09

COM Config

- Interfaces
- Network connections
 - Ethernet
 - Modem
 - Incoming
 - Outgoing
 - Global
 - Server1
 - Server2
- Networking Config
- Manage Config

PPP outgoing Connection ☒ Enabled

Global outgoing connections parameters

Dial and connection timeout	180	seconds	
Enable protocol compression	<input checked="" type="checkbox"/>		
Delay between dialout retries	60	seconds	

Maximum connection time

Idle time before hanging up	1200	seconds	Minimum 60 seconds
Max outgoing call duration	60	minutes	0 for no limit
Hangup if no outgoing action after	-1	minutes	-1 to hangup after idle time

Error recovery

Select next server in case of error	Use only server 1		
Reset modem after	4	outgoing call failures	
Minimum GPRS connection duration	4	seconds	
Reset GPRS modem after	5	connection(s) shorter than min. GPRS duration	

Calls budget management

Allocated budget	24	hours	0 for no limit
Reset budget period	168	hours	
Current budget period: 23:20:50		hours	Leave empty for 'no change'
Volume: IN: 607880, OUT: 858865, Last reset: 01/01/1970 00:00:00 <input type="checkbox"/> Reset			Reset volume monitoring counters

Update

Figure 31: Modem Outgoing Global setup page

Control	Description
Dial and connection timeout	Time allowed for the whole establishment of the PPP link to be up. This means modem call, modem negotiation, PPP negotiation and logon. This time includes all trials on each server. This is thus a global time.
Enable compression	Enable the compression negotiation request when an outgoing call occurs. This includes all compression modes known by the eWON PPP engine (Van Jacobson, header compression,...).
Delay between dialout retries	In case of an unsuccessful attempt to establish the outgoing communication, then eWON will retry to establish it again. This parameter will allow you to define the amount of time the eWON will wait to try and establish again the outgoing action.
Idle time before hanging up	eWON will hang up after this amount of time if no data transfer occurs on the PPP link between the eWON (any type of PPP packet) and a remote host (Computer).
Max outgoing call duration	The maximum amount of time of the outgoing call. When this amount of time is reached, then the eWON stops the PPP communication.
Hang up if no outgoing action after	When a PPP link is triggered by an outgoing action (not by DialOnDemand), you can force the interruption of the line immediately after the actions (set 0) or let the PPP active for an amount of time (set >0). The PPP link will be shut down after the x minutes even if transfers are in progress. The <i>Idle time before hanging up</i> is always active.
Select next server in case of error	When the call to a server failed, you can choose the behavior of the next call. eWON will be configured to: <ul style="list-style-type: none"> • Use last valid server • Always return to server 1 • Use only server 1 • Use only server 2

Table 30: outgoing calls configuration controls

Reset modem after	Consider this parameter like a Watchdog parameter. To avoid eWON to stay stucked due to any modem reason, you can use this parameter to force a reset of the modem after xxx outgoing calls failure.
Minimum GPRS connection duration	<i>Only available on eWON with GPRS modem.</i> Time in seconds: if the GPRS dial-out connection is shorter than this time, the connection is considered as ERROR. If set to "-1", this time is not tested (default value = 4). <i>See "Note: GPRS modem connection error management" on page 39.</i>
Reset GPRS modem after	<i>Only available on eWON with GPRS modem.</i> Maximum number of GPRS connection ERROR accepted before the modem is reset (default value = 5). <i>See "Note: GPRS modem connection error management" on page 39.</i>
Allocated Budget	This is the allocated time budget for outgoing calls. When a communication initiated by the eWON is in progress, the current period budget (remaining time) is reduced. When all the time budget is used, the eWON cannot make outgoing call.
Reset budget period	This is the time allowed in order to use the budget. After the call period is over, a new period is started and the new period timer is reset to this value. In the above example, this means that the current budget period is reset to 24 hours each 168 hours. The reset period is restored to its value each time one of the three configuration fields is modified.
Current period budget	This is the remaining call budget for the current period, expressed in hours:min:sec. A new budget can be provided; this restarts a new reset period. For example, in the above example 24 hours are remaining, if we force 100 hours as call budget, the reset period is reset. This means that for the newly started period, 100 hours are allocated. A new period will start again in a delay of 168 hours.
Current VOL IN/OUT info Reset	Information: counters of volume transmitted (IN and OUT) You can reset it by checking the 'Reset' box.

Table 30: outgoing calls configuration controls

Click on the **Update** button when you have filled this part of the eWON configuration.

Note: GPRS modem connection error management

The "Minimum GPRS connection duration" and the "Reset GPRS modem after" parameters have been added to monitor problems with GSM-GPRS connection.

In case these problems occur, the result can be a short or unsuccessful PPP connection. In that case the Dialout Out to server works (CONNECT message received from the modem), then the PPP negotiation starts and then:

1. either the PPP connection starts
2. or the LCP negociation fails

but in any case the connection is short (less than 2 to 4 seconds).

In the first case above, a message is logged in the events.txt file saying:

```
eppp-Open client connection
eppp-Close client connection (Cnxttime: 0 S. [2])
```

In the second case, the PPP connection does not start, but a message is logged in the events.txt file saying

```
eppp-PPP negociation failed. (user/password/pap-chap)
```

The problem may be due to a bad configuration of APN,user,password, authentication mode (CHAP, PAP), but it can also be due to a GSM problem for doing an "Attach" to the GPRS.

In that case, it may be required to reset the modem to help it recover.

REM1: these test only apply to GPRS connection, if username or password is invalid for another type of dial-out, the modem will not be reset.

REM2:

```
eppp-PPP negociation failed. (user/password/pap-chap)
```

The above message is generated for any type of dial-out that 50 fails before PPP connection goes online.

Primary & secondary servers

The following parameters are the same for both servers. Two different servers can be set up. This ensures that the eWON can find a way out for PPP link if a server is down. At the startup of a connection, the primary server is always dialed first. If the connection cannot be established, the eWON tries the second server. If it fails, then it toggles back to the primary server. This is done until the dial-out timeout is reached.

Figure 32: Modem Outgoing Server setup page

Control	Description
Connection type	only present in GSM/GPRS modems. Select the dialUp type: <i>Remote acces connection</i> or <i>GPRS</i> . With GPRS, the Server phone number will be hidden (unused).
Server phone number	The complete phone number of the server. A coma (,) can be used to insert a pause (can be useful i.e. if you have to go through a pabx).
User Name	The User name of your ISP login for PPP link establishment.
Password	The Password linked to the above login for PPP link establishment.
Require secure authentication (CHAP)	If this box is checked, then the eWON explicitly requests CHAP authentication for the PPP link. If the other side cannot do CHAP, no connection will be made. If this box is left unchecked, then PAP (clear text password) is used.

Table 31: Modem Outgoing Server configuration controls

3.3.4.2.3 ADSL

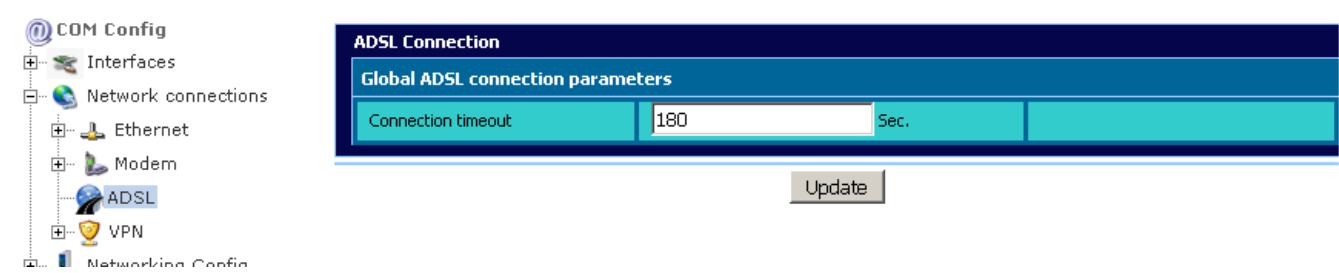


Figure 33: ADSL global connection parameters

Control	Description
Connection timeout	The maximum time the eWON will wait for the ADSL WAN to be established. After this time, the connection will fail. If Maintain Connecion is selected, then the eWON will retry continuously.

Table 32: ADSL global connection configuration control

3.3.4.2.4 VPN

General	Communication	Storage	13/10/2008 16:36:14																		
COM Config Interfaces Network connections Ethernet Modem VPN Global Incoming Outgoing Networking Config Manage Config																					
VPN Connection configuration Advanced options <table border="1"> <tr> <td>Diagnosis level</td> <td>Low</td> <td>Diagnosis goes to 'Real time log'</td> </tr> <tr> <td>Port In</td> <td>0</td> <td></td> </tr> <tr> <td>Port Out</td> <td>1194</td> <td></td> </tr> <tr> <td>'keep alive' interval</td> <td>120 seconds</td> <td>0 = disable Keep alive.</td> </tr> </table> Really Advanced options Please do not change, unless you know exactly what you are doing! <table border="1"> <tr> <td>VPN Driver Mode</td> <td>TAP</td> <td>Reboot required when changed.</td> </tr> <tr> <td>VPN Protocol</td> <td>UDP</td> <td></td> </tr> </table>				Diagnosis level	Low	Diagnosis goes to 'Real time log'	Port In	0		Port Out	1194		'keep alive' interval	120 seconds	0 = disable Keep alive.	VPN Driver Mode	TAP	Reboot required when changed.	VPN Protocol	UDP	
Diagnosis level	Low	Diagnosis goes to 'Real time log'																			
Port In	0																				
Port Out	1194																				
'keep alive' interval	120 seconds	0 = disable Keep alive.																			
VPN Driver Mode	TAP	Reboot required when changed.																			
VPN Protocol	UDP																				
Update																					

Figure 34: VPN Global setup page

Control	Description
Diagnosis level	Choose the level of diagnosis reported in the "Real Time Log" on page 161. Level could: <i>None, Low, Medium or High</i>
Port In	The TCP Port number where eWON will listen all incoming VPN traffic. port <> 0 Only this port could be use for incoming VPN traffic. 0 = default behavior <ul style="list-style-type: none"> If VPN is initiated by the eWON (contacting eSync), the incoming port will be set dynamically If VPN is initiated by an external source (eCatcher), the eWON listens on the port 1194 (hardcoded)
Port Out	The TCP Port number where eWON will send all outgoing VPN traffic (default 1194)
'Keep alive' interval	Set at which interval (in second) the eWON send a short packet to maintain the connection opened.
VPN Driver Mode	Select the VPN driver mode you need. Available mode are: <ul style="list-style-type: none"> • TAP • TUN
VPN Protocol	

The eWON can be set to “listen” to incoming connections, you may connect directly your computer (or another eWON) to an eWON and establish a secured VPN channel.

Figure 35: VPN Incoming setup page

Control	Description
Passphrase	Enter the passphrase that will be used as certification for the incoming connection.
VPN IP addresses config	Choose between automatic/Manual Automatic: the IP addresses used will be set automatically Manual: the IP addresses used are defined statically with the 2 following parameters.
Local VPN IP address	IP address taken by eWON (in manual config)
Remote VPN IP address	IP address taken by the remote device, PC or eWON, (in manual config)

3.3.4.2.4.1 Outgoing VPN

Outgoing VPN can work in three schemes:

- **build a VPN between two eWONs**
- **contact a VPN Server to join a VPN Network**
- **contact an ENDIAN VPN server**

VPN between two eWONs

General	Communication	Storage	11/05/2006 15:30:23
CDM Config Interfaces Network connections Ethernet Modem VPN Global Incoming Outgoing Networking Config Manage Config			
Establish outgoing VPN connection configuration VPN activation rule The VPN activation rule is normally defined in Networking Config (duplicated here for simplicity) Establish VPN connection <input checked="" type="checkbox"/> During Internet connections Remote VPN WAN address or name Primary server <input type="text"/> Remote IP address or name Secondary server <input type="text"/> Leave empty if no secondary server Connect to...: Other eWON Passphrase <input type="password"/> VPN Ip addresses config Automatic Local VPN IP address 10.254.0.1 Remote VPN IP address 10.254.0.2 Update			

Figure 36: VPN Outgoing setup page (connect to other eWON)

Control	Description
Connect to...OTHER eWONs	
Primary Server	The address or Name of the primary VPN Server
Secondary Server	The address or Name of the secondary VPN Server (called if primary failed)
Passphrase	Enter the passphrase that will be used as certification for the outgoing connection.
VPN IP addresses config	Choose between automatic/Manual Automatic: the IP addresses used will be set automatically Manual: the IP addresses used are defined statically with the 2 following parameters.
Local VPN IP address	The IP address taken by eWON (in manual config)
Remote VPN IP address	The IP address taken by the remote device, PC or eWON, (in manual config)

VPN with a Server

General	Communication	Storage	11/05/2006 15:30:23
COM Config Interfaces Network connections Ethernet Modem VPN Global Incoming Outgoing Networking Config Manage Config			
Establish outgoing VPN connection configuration			
VPN activation rule The VPN activation rule is normally defined in Networking Config (duplicated here for simplicity)			
Establish VPN connection		<input checked="" type="checkbox"/>	During Internet connections
Remote VPN WAN address or name			
Primary server	<input type="text"/>	Remote IP address or name	
Secondary server	<input type="text"/>	Leave empty if no secondary server	
Connect to...: VPN Server			
You must copy/paste the 3 key/cert. files in the corresponding locations.			
Private KEY:		<input type="text"/>	
eWON CERTIFICATE:		<input type="text"/>	
CA (Certificate Authority) CERTIFICATE:		<input type="text"/>	
<input type="button" value="Update"/>			

Figure 37: VPN Outgoing setup page (connect to VPN Server)

Control	Description
Connect to...VPN Server	
Primary Server	The address or Name of the primary VPN Server
Secondary Server	The address or Name of the secondary VPN Server (called if primary failed)
Private key	Place here your Private KEY
eWON Certificate	Place here your eWON CERTIFICATE
CA (Certificate Authority) CERTIFICATE	Place here your CA CERTIFICATE

VPN with an ENDIAN Server

You can find information about the ENDIAN Server on www.endian.com

Figure 38: VPN Outgoing setup page (connect to ENDIAN VPN Server)

Control	Description
Connect to...ENDIAN VPN Server	
Primary Server	The address or Name of the primary ENDIAN VPN Server
Secondary Server	The address or Name of the secondary ENDIAN VPN Server (called if primary failed)
Username	Place here the eWON identification
password	Place here the password to log on the VPN server
CA (Certificate Authority) CERTIFICATE	Place here the CA CERTIFICATE from the ENDIAN VPN configuration

3.3.4.2.5 WAN/LAN/PPP interface management

Thanks to its 2 ethernet interfaces (2005/4005), since firmware 5, the eWON makes a strong distinction between the WAN interface and the LAN interface.

3.3.4.2.5.1 LAN (Local Area Network)

In the eWON, the LAN is the ethernet interface connected to a local network.
It is simply an ethernet interface with no specific properties.

3.3.4.2.5.2 WAN (Wide Area Network)

In the eWON, the WAN is the (ethernet) interface connected on Internet.

That means:

- WAN could be an *ethernet* or an *outgoing modem (PPP)* connection
- WAN is active only when the connection is pulled up
- WAN has some properties like:
 - Being able to publish its IP address

Publish WAN IP address	
Publish IP address	Enabled

- Being able to establish VPN when WAN is active

VPN network setup	
VPN use conditions	
During Internet connection:	<input type="radio"/> Disable VPN <input type="radio"/> Listen for incoming VPN from client <input checked="" type="radio"/> Establish outgoing VPN to server

- Can be configured for NAT and Transparent Forwarding

NAT and TF (Transparent Forwarding)	
Apply NAT and TF to connection	NAT and TF on WAN
Enable transparent forwarding	<input checked="" type="checkbox"/>
Highest transparent forwarding port	10000

- Being protected according to the configuration

WAN Protection	
WAN Protection level	<input type="radio"/> Discard all traffic excepted VPN and initiated traffic (ex: Email) <input type="radio"/> Discard all traffic excepted VPN and initiated traffic (ex: Email) and ICMP (Ping) <input checked="" type="radio"/> Allow all traffic on WAN connection (no protection)

- Can be configured for Static Routes

Static routes table			
	Destination	Mask	Gateway
Route 1	0.0.0.0	0.0.0.0	0.0.0.0

- Can be configured for Proxy rules

Proxy Configuration <input checked="" type="checkbox"/> Enabled				
Global proxy parameters				
Idle connection timeout	180	seconds		
Maximum connections per proxy entry	5			
Proxy External Interface (EXT)	WAN			
Proxy configuration table				
	Protocol	Direction	Incoming port	Destination port
Entry 1	Disabled	Disabled	0	0

Ethernet WAN Connection - Disconnection sequence (since firmware 5.4)

Connection:

- Ethernet WAN interface is pulled up (the Link Led will lighten if a cable is connected)
- Apply DNS server change if valid
- Configure the Default gateway for the interface if valid

Disconnection:

- Remove the default gateway if it was configured during connection
- Pull down the Ethernet WAN interface (the Link Led will go off)
- Remove the DNS configuration if it has changed

Since firmware 5.4, the WAN Link Led behavior depends on your configuration.

It is not only hardware related.

By default, the WAN Link Led is off even if a cable is plugged.

Ethernet WAN permanently activated (before firmware 5.4)

Before revision 5.4, the WAN Ethernet interface was configured during eWON boot time. When the Internet connection was “activated” by the WAN management, the Interface configuration was not affected, only the gateway configuration was modified.

Since version 5.4, the WAN Ethernet interface is managed like the PPP interface i.e. it is pulled up when activated and pulled down when deactivated.

Consequently, the WAN Ethernet IP configuration can be changed and the new configuration will be applied the next time the interface goes up.

3.3.4.2.5.3 PPP (Point-to-Point Protocol)

In the eWON, the PPP is the Modem connection

This PPP connection could

- be an Incoming or Outgoing modem connection
- update the default Gateway of the eWON
- be considered as a WAN

Depending of the PPP connection type, the Gateway (GW) and/or the WAN are presents.

PPP connection type	Gateway	WAN
default Outgoing connection (eWON acts as PPP client)	Yes	Yes
Callback to “Primary/Secondary server” Outgoing connection (eWON acts as PPP client)	Yes	Yes
Callback to “User Defined Phone Number” Outgoing connection (eWON acts as PPP client)	No	No
Incoming connection (eWON acts as PPP server)	Yes (*)	No

Table 33: PPP: Gateway and WAN

(*) Only if “Use incoming for outgoing” is checked

Use incoming for outgoing	<input checked="" type="checkbox"/>	Connected client is a gateway
---------------------------	-------------------------------------	-------------------------------

3.3.4.2.6 Ethernet Gateway behavior

On the eWON, it is possible to define a default gateway on the ethernet interface. First we must consider 2 cases.

- The eWON has 2 ethernet interfaces (2005/4005/2005CD/4005CD/2104/4104)
In this case, the gateway is active **only while the WAN interface is connected**.
The eWON-ADSL must be considered as an eWON with 2 Ethernet interfaces.
The ADSL interface is a WAN interface.
- The eWON has only 1 ethernet interface.

Ethernet LAN Connection	
Address Setup	
IP address	192.168.1.53
Subnet mask	255.255.255.0
Default gateway	192.168.1.99
Use BOOTP	<input type="checkbox"/>

3.3.4.2.6.1 eWON with 2 Ethernet interfaces

• Normal behavior

The Ethernet gateway is configured only when the ethernet WAN connection is established.

The Ethernet WAN connection is established on demand when the eWON has no route for a packet, or always when the "Maintain connection" option is checked in the "Internet connection" configuration".

Internet connection setup	
Internet access	
Network connection	Modem Connection
Maintain connection	<input type="checkbox"/>

• Gateway during an incoming PPP connection

There is a special case when:

- WAN Ethernet connection is enabled
- Incoming PPP is enabled
- Use incoming for outgoing is enabled

In that case, when the incoming communication is received, the eWON will try to configure the PPP connection as the default gateway. This will happen only if the WAN connection is not enabled at that time.

So, if the PPP connection is established and the WAN connection is not active, the PPP connection becomes the gateway. If the WAN connection is active, then the PPP connection will not become the gateway.

PPP incoming Connection	
PPP Server Setup	
eWON PPP server IP address	202.0.0.240
PPP Client IP address	202.0.0.1
Enable protocol compression	<input checked="" type="checkbox"/>
Use incoming for outgoing	<input checked="" type="checkbox"/>

3.3.4.2.6.2 eWON with 1 Ethernet interface

• Normal behavior

In that case, if a gateway is defined, it will become the default gateway **only** if the Internet access is set to "No internet access"

Internet connection setup	
Internet access	
Network connection	No Internet access
Maintain connection	<input type="checkbox"/>

If the "Network connection" is configured to something different from "No internet access", the Ethernet gateway will not become the default gateway, and a warning will be issued in the event log:

"Ethernet gateway not used (incompatible internet connection)"

• Gateway during an incoming PPP connection

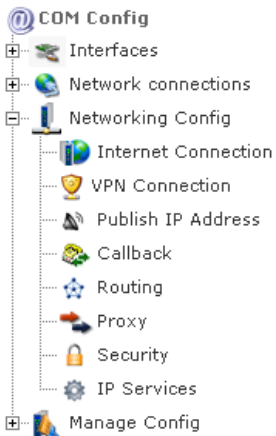
During the incoming PPP connection, the default gateway is normally not changed, **except** if the 'Use incoming for outgoing' option has been selected.

In that case, the default gateway becomes the PPP connection during the incoming connection.

The default gateway is reconfigured to the Ethernet gateway when the PPP connection ends.

PPP incoming Connection	
PPP Server Setup	
eWON PPP server IP address	202.0.0.240
PPP Client IP address	202.0.0.1
Enable protocol compression	<input checked="" type="checkbox"/>
Use incoming for outgoing	<input checked="" type="checkbox"/>

3.3.4.3 Networking Config



The Networking Config section sets all the network behaviors of your eWON.

These behaviors are:

- **How to connect to the Internet**
- **What is the VPN behavior**
- **Do I publish the IP address, do I use No-IP**
- **Callback**
- **Routing rules**
- **Proxy features**
- **Security features**
- **IP ports configuration**

3.3.4.3.1 Internet connection

General	Communication	Storage																													
12/05/2006 10:12:35																															
	<div style="background-color: #000080; color: white; padding: 5px; font-weight: bold;">Internet connection setup</div> <div style="background-color: #000080; color: white; padding: 5px; font-weight: bold;">Internet access</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Network connection</td> <td style="width: 30%;">Modem Connection</td> <td style="width: 20%;"></td> </tr> <tr> <td>Maintain connection</td> <td><input type="checkbox"/></td> <td></td> </tr> </table> <div style="background-color: #000080; color: white; padding: 5px; font-weight: bold;">Publish WAN IP address</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Publish IP address</td> <td style="width: 30%;">Disabled</td> <td style="width: 20%;">Configure publish IP address</td> </tr> <tr> <td>Re-publish interval</td> <td>0 minutes</td> <td>0 for publication only at initial connection</td> </tr> </table> <div style="background-color: #000080; color: white; padding: 5px; font-weight: bold;">"On demand" Internet connection</div> <div style="background-color: #000080; color: white; padding: 5px;"> <input checked="" type="radio"/> Accept dial on demand from NO ONE EXCEPT from: </div> <div style="background-color: #000080; color: white; padding: 5px;"> <input type="radio"/> Accept dial on demand from ANYONE EXCEPT from: </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">IP Range</td> <td style="width: 20%;">From: 0.0.0.0</td> <td style="width: 20%;">To: 0.0.0.0</td> <td style="width: 20%;"></td> </tr> <tr> <td>IP Range</td> <td>From: 0.0.0.0</td> <td>To: 0.0.0.0</td> <td></td> </tr> <tr> <td>IP Range</td> <td>From: 0.0.0.0</td> <td>To: 0.0.0.0</td> <td></td> </tr> <tr> <td>IP Range</td> <td>From: 0.0.0.0</td> <td>To: 0.0.0.0</td> <td></td> </tr> </table>			Network connection	Modem Connection		Maintain connection	<input type="checkbox"/>		Publish IP address	Disabled	Configure publish IP address	Re-publish interval	0 minutes	0 for publication only at initial connection	IP Range	From: 0.0.0.0	To: 0.0.0.0		IP Range	From: 0.0.0.0	To: 0.0.0.0		IP Range	From: 0.0.0.0	To: 0.0.0.0		IP Range	From: 0.0.0.0	To: 0.0.0.0	
Network connection	Modem Connection																														
Maintain connection	<input type="checkbox"/>																														
Publish IP address	Disabled	Configure publish IP address																													
Re-publish interval	0 minutes	0 for publication only at initial connection																													
IP Range	From: 0.0.0.0	To: 0.0.0.0																													
IP Range	From: 0.0.0.0	To: 0.0.0.0																													
IP Range	From: 0.0.0.0	To: 0.0.0.0																													
IP Range	From: 0.0.0.0	To: 0.0.0.0																													

Figure 39: Internet connection setup page

Control	Description
Internet access	
Network connection	Set here how eWON will connect to the Internet. Choose among the 3 choices: <ul style="list-style-type: none"> • No Internet access • Modem Connection • Ethernet WAN connection (or ADSL)
Maintain connection	Set this checkbox if you want a permanent connection to Internet. The eWON will monitor the connection and re-establish it if the line is dropped.
Publish WAN IP address	
Publish IP address	Enable or disable the publication of the WAN IP address of the eWON. See "Publish IP address" on page 52 for configuration parameters.
Re-publish interval	Set the time interval for the re-publication of the WAN IP address.

Table 34: Internet connection parameters

"On demand" Internet connection	
Dial On Demand	<p>It is possible to establish remote connections towards the ISP by using the Dial On Demand feature. If selected, the eWON will try to connect to the ISP each time a connection will be required (i.e. packets to send). Those fields allow you EITHER to exclude OR to select IP addresses ranges that are allowed or refused for Dial On Demand. Four different IP addresses ranges can be defined.</p> <p>Note: those fields will be updated at each new PPP connection.</p> <p>Important: By default, the Dial On Demand is configured to refuse all connections.</p>

Table 34: Internet connection parameters

note: If *Network Connection* is on *Ethernet WAN connection*, the Ethernet interface is not active as long as the WAN is not connected.

See "Ethernet WAN Connection - Disconnection sequence (since firmware 5.4)" on page 48

note: If *Network Connection* is on *ADSL*, and you want to allow devices connected on the eWON-LAN to go on Internet, don't forget to set the *Routing to NAT and TF on WAN* (See "Routing" on page 55).

3.3.4.3.2 VPN connection

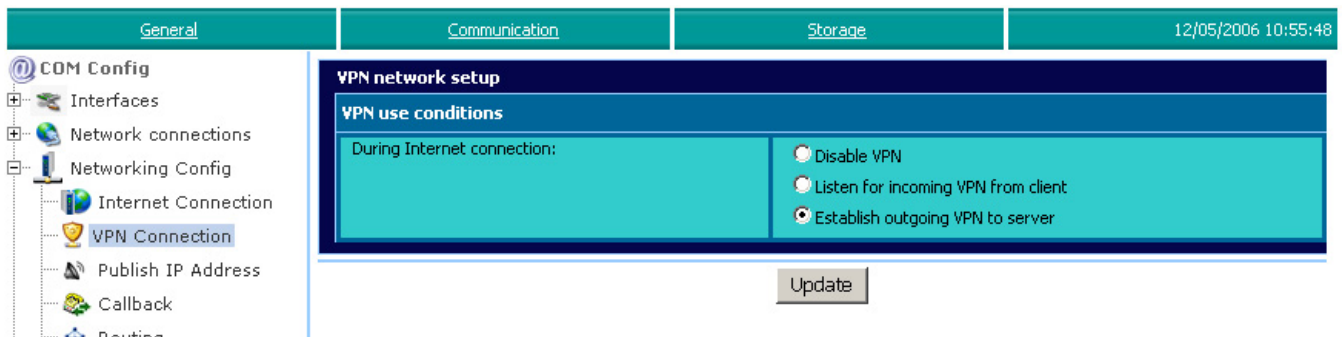



Figure 40: VPN connection setup page

Control	Description
VPN use conditions	
During Internet connection	<p>Set here how eWON will use the VPN. Choose among the 3 choices:</p> <ul style="list-style-type: none"> • Disable VPN • Listen for incoming VPN from Client • Establish outgoing VPN to server

3.3.4.3.3 Publish IP address

When the eWON goes to the Internet (automatically or by CallBack) , it can receive a different IP address at each connection. It needs to inform you of its new WAN address thanks to this publish IP function.

Figure 41: Publish IP address configuration page

Control	Description
Publish by EMAIL	
Email destination address	This field allows you to define the destination address by default that will receive the notification.
Publish by dynamic DNS	
Dynamic DNS Provider	<p>Choose your Dynamic DNS provider among the list beside</p> <p>A Dynamic DNS provider are services that allows you to publish on the Internet a domain name that matches the IP address of your PC (fix or dynamic type).</p> 
Dynamic DNS Username	Put here your Username.
Dynamic DNS password	This field allows you to enter a valid password for the Dynamic DNS server you want to use.
Dynamic DNS Host name	This field allows you to enter a valid host name for the Dynamic DNS server that you want to use e.g. <i>myewon</i> .
Dynamic DNS Domain name	<p>This field allows you to enter a valid domain name for the Dynamic DNS server you want to use e.g. <i>no-ip.com</i>.</p> <p>In our example, your eWON will be accessible at <i>http://myewon.no-ip.com</i></p>
Debug connection	Check it to record debug info about DynDns negotiation in the "Diagnostic->RealTimeLog" page.

You need to to check the Enabled AND select NO-IP as dynamic DNS to access parameters.

Otherwise, you will see the page like this:

3.3.4.3.4 Callback

Warning: depending on your eWON's version (c.f. Table 187 on page 203)

This menu contains the configuration controls that the eWON will use to perform callback operations.

The screenshot shows the 'Callback setup' configuration page. The 'General' tab is active. At the top right, the date and time are 12/05/2006 11:18:06. The 'Callback enabled' checkbox is checked. Below this, the 'General' section contains several fields: 'Callback delay' is 30 seconds, 'Wait for user login for' is 1200 seconds, 'Dialup account' is set to 'Primary dialup server', and 'Publish IP address' is set to 'Disabled' with a link to 'Configure publish IP address'. The 'Callback mode' is set to 'On RING'. At the bottom, 'Number of RINGS' is 5 and 'Plus number of RINGS then On Hook' is 10. An 'Update' button is located at the bottom center.

Figure 42: Callback configuration

Control	Description
General Callback Config	
Callback enabled	If this box is checked, then the eWON callback feature is enabled. This means that the eWON can be triggered by an external event in order to call a given phone number in order to establish a PPP link. This permits to let the eWON's phone line pay for the call, with a budget maintained by the eWON itself. This also ensures more security if you are calling back a private server. Do not forget to enable outgoing calls in the dialup configuration.
Callback delay	Once the eWON has been triggered, it will wait for this amount of time before dialing out. This is useful in order to release the phone line or perform any other action.
Wait for user login for	Once the eWON has been triggered, it will wait for this amount of time in order for the user to log-in. Otherwise, the call is dropped. It is clear that this delay has to be greater than the sum of the callback delay and the call establishment.
Dialup account	This list box permits to choose the server used for callback. The "User's request account" option can not be chosen when the trigger mode is "Ring", because the eWON does not know the server data at this time.
Publish IP address	Enables/Disables the publication of the IP address once the eWON is connected to the Internet. The publishing parameters are defined in the "Publis IP Address" menu (previous chapter).
Callback mode: ON RING	This is a mutual exclusive option with Callback on User's request. Selecting this option disables the User Callback mode. When the eWON sees an incoming call, it will trigger its callback task.
Number of RINGS	(minimum value is 2): This is the number of rings needed before the eWON callback function is triggered. Assuming that a value of 3 has been entered, the eWON will generate a callback if someone calls the eWON and lets the phone ring 5 times.
Plus number of RINGS then On Hook	(minimum value is 5): This is the number of rings that are necessary to avoid the callback trigger. Assuming that a value of 5 has been entered, if the user tries to call the eWON directly, this can be achieved by ringing the phone more than the sum from the two values. With the current example, the eWON will pick up the line after more than 3+5=8 rings are detected.
Callback mode : ON User's request	When this option is selected, the eWON accepts the incoming calls and then the user can request a callback to a defined server. When connecting to an eWON with Callback on user's request, you will get the following webpage. You will start the callback by using the Callback button or abort (hang up the phone line) by using the "Close PPP Connection" button. The callback can be performed with the parameters specified in the user's configuration page. The delay the eWON will wait before initiating the callback can be specified.

Table 35: general callback configuration controls

Callback		
Callback:	Primary Dialup Server	Callback
Delay:	<input type="text" value="30"/>	seconds

Close Curent Connexion
Close PPP Connexion

Figure 43: Callback on user's request at logon

Note: When connecting to an eWON with Callback on user's request, you will get the above webpage.

You will start the callback by using the Callback button or abort (hang up the phone line) by using the "Close PPP Connection" button.

Please check the callback configuration that has been defined in the user's configuration (see the below screenshot), especially if you enable the "Callback on user's request" checkbox in the callback configuration window.

Callback		
Enabled	<input type="checkbox"/>	Callback must also be globally enabled in System Config
Callback phone number value is	<input type="text" value="Mandatory"/>	Defines if user can change phone number
Callback phone number	<input type="text"/>	User's login and password are used to connect to server

Figure 44: eWON User callback setup

3.3.4.3.5 Routing

Warning: Depending on your eWON's version (c.f. Table 187 on page 203)

This page contains the router configuration of the eWON, the PPP settings for the server and client functions of the eWON engine, in order to define the way that you will use your eWON to access remote devices, and access them through the eWON as if they were on your local site.

Figure 45: Routing setup page (on eWON VPN : 2005, 4005, 2101, 4101, 2104, 4104)

Control	Description
Special rules	
Route all gateway traffic through VPN	Check this box if you want to route ALL gateway traffic (except static routes) through the active VPN interface. If unchecked, the traffic could take the VPN route or the WAN route (unencrypted).
NAT and Transparent Forwarding	
Apply NAT and TF to connection	This feature enables the Network Address Translation (NAT) and Transparent Forwarding (TF). If the device to reach is on the same LAN as the eWON, and if the user has correctly defined the address IP and the port for this device, then the eWON will redirect the packets towards it. This means that only the packets for the concerned port will be redirected towards the selected IP address. You can choose on which interfaces this NAT and TF will be used: VPN , WAN or disable it.
Enable transparent forwarding	If this box is checked, the transparent forwarding feature of the eWON is activated (see below for Transparent Forwarding definition).
Highest transparent forwarding port	Only a range of ports are forwarded transparently. You can control this range, from 0 to 32767 (Default is 10000). The above Ports will be directed to eWON itself. Exception: to allow to come back to the eWON website, the port 81 (by default) is excluded from this range.

note: If *Network Connection* is on *ADSL*, and you want to allow devices connected to the eWON-LAN to go to the Internet, you must set the *Routing* to *NAT and TF on WAN*.

Routing setup		
IP Forwarding		
Enable IP forwarding between IP interfaces	<input checked="" type="checkbox"/>	
NAT and TF (Transparent Forwarding)		
Apply NAT and TF to connection	NAT and TF on WAN	
Enable transparent forwarding	<input checked="" type="checkbox"/>	
Highest transparent forwarding port	10000	

These changes will be effective from next WAN connection

Update

Figure 46: Routing setup page (on eWON without VPN : 2001, 4001, 4002)

The *IP Forwarding* configuration check box enables the forwarding between both interfaces (LAN and PPP).

On VPN eWONs, this check box does not appear because IP Forwarding is **always active**.

Term	Definition
IP forwarding	<p>This means that a link can be performed between PPP and Ethernet IP packets. Please note that this is dangerous because it can connect your LAN directly to the Internet.</p> <p>This feature can be used in order to connect a device to the Internet through the eWON. For example, if an automaton is connected to the Ethernet LAN of the eWON and has the eWON IP address as gateway address, the eWON will perform anything needed in order for the device to send its packets (dialout, IP translation ...). Example: a device sends a mail on the Internet, while the eWON performs the PPP dial-out.</p> <p>Another use is to access a device located on the Ethernet LAN of the eWON, the user directly calls the eWON and then gets access to its distant device through its LAN IP address. Example: a user on a LAN with IP address range 192.168.0.xxx can access its device on the eWON LAN, with the eWON IP address 10.0.0.81 and the distant device with IP 10.0.0.82 and having the eWON as a gateway. The eWON will for example assign the IP address 202.0.0.1 to the PPP adapter of the PC and take for its PPP adapter the IP address 202.0.0.240.</p>
NAT	<p>Network Address Translation (NAT).</p> <p>If the device to reach is on the same LAN as the eWON, and if the user has correctly defined the address IP and the port for this device, then the eWON will redirect the packets towards it. This means that only the packets for the concerned port will be redirected towards the selected IP address. IP Forwarding must be activated for NAT to be active.</p>
Transparent forwarding	<p>For this to work, the IP forwarding must also be enabled. With simple IP forwarding, it is not possible to access a device located on the eWON Ethernet LAN through the Internet. For example if the eWON is connected to the Internet through PPP (for example on alarm), it publishes its IP address by email. In order to have access to its device, the user cannot simply type the IP address of the device like this was done with IP forwarding and direct eWON call.</p> <p>In this case, transparent forwarding is the only solution: when accessing the eWON, the user can request to perform transparent forwarding once he logs in. He can then see the window that is illustrated by the screenshot below this table. If the device is on the same network as the eWON and gets the eWON as gateway, and if the user configured the IP address of the device at eWON login, the eWON routes all packets to this device.</p> <p>This means that all IP packets, on all ports except 81 will be routed transparently to the selected IP address. In order to get access to the eWON web server, the user has to connect to port 81 of the eWON IP address. For example http://10.0.0.53:81 will access the eWON main page, while 10.0.0.53 will access the IP address 10.0.0.56 of the device located onto the LAN if the user selected this IP at logon. The user can clear transparent forwarding by getting access to the port 81 and using the "Clear transp forwarding" button. Note that FTP cannot be routed, since it includes the target IP address in its frame in text mode.</p>

Figure 47: eWON PPP Router logon screen

3.3.4.3.5.1 Static routes

Before the firmware 5.2, it was only possible to configure a default gateway to reach a given destination node when not located on the eWON's physical network.

This feature adds the ability to configure 3 additional entries in eWON's routing tables (static routes).

The eWON will forward packets using these routing entries when the IP packet destination matches one of the routing destination entries. The default gateway if specified will only be used when no routing entry matches the destination.

Control	Description
Static routes table	
Destination & Mask	The destination IP address and the mask represent a range of addresses that must be routed through a specific gateway. ex: dest=192.168.1.0 & mask=255.255.255.0 correspond to the range of address between 192.168.1.0 and 192.168.1.255
Gateway	This is the IP address of the gateway that must be used to route the range of address defined by Destination/Mask. Important: the Gateway address must be in the IP range of the eWON interface. In other words, the Gateway must be accessible by the eWON. For example if the IP address is 10.0.0.53/255.255.255.0, the gateway can be 10.0.0.254, but it CANNOT be 192.168.1.1.
Hops	This is the number of hops to reach the destination using the given route. This parameter will define the priority of the routes. The eWON local routes (routes that do not require the emission of a packet through an interface) have a 0 hop metric. A route where the destination can be reached through the interface has a 1 hop metric. The higher the metric is, the lower the route's priority will be.
Clear (button)	The clear button can be used to invalidate the route entry content and remove the route.

Important: The route configuration is applied immediately when the update button is pushed. It is not required to reboot the eWON to apply the routes modification.

note: The *default gateway* is NOT defined using these configuration variables (Ethernet Gateway is used instead).

3.3.4.3.6 Proxy

3.3.4.3.6.1 Why a proxy feature?

Since firmware 5.2, the eWON has a built-in ProxyServer.

The Proxy feature is similar to the transparent forwarding, with some advantages and some drawbacks.

To be precise, it is not exactly equivalent to the transparent forwarding that forwards all the ports (except the 81), but more like a "port forwarding" feature that would forward some ports.

The main advantage of the proxy implementation is that the "proxy's destination device" must NOT define the eWON as its gateway.

3.3.4.3.6.2 Comments on the proxy feature

• Overhead

There is an important difference between a forwarded packet and a proxied packet. When the packet is forwarded, it is modified at a very low level of the stack, then it is immediately resent without any further interpretation, manipulation or storage.

When the packet is proxied, the stack must first maintain storage for the proxied sockets, then every packet must walk the stack all way up to the proxy application, then all the way down to be resent.

This means an additional load for the system.

• Proxied ports must be known and configured

In "Forwarding" mode all ports are forwarded, there is no need to configure anything.

In Proxied mode, the user must know what port(s) he wants to forward and what protocol (UDP, TCP, FTP) will flow on the port.

• More intrusive content

As said before in "Forwarding" mode, the packet is resent "as received". If it contains 4 bytes, 4 bytes are resent. This is not true in the proxy mode as the received data are (at least may be) re-aggregated at the proxy level.

Example: if the client sends a 4 bytes packet followed by a 2 bytes packet, then the proxy can resend a 6 bytes packet to the "proxy's destination device". From a TCP point of view, there is no difference, but from a behavior point of view, there is a slight difference.

One must check what protocol are considered here with the "proxy's destination device" and check if there is a chance that the proxy may disturb the client-"proxy's destination device" discussion.

3.3.4.3.6.3 Configuration.

The screenshot shows the 'Proxy Configuration' page with the 'Enabled' checkbox checked. The left sidebar contains a tree view with 'COM Config' expanded, showing 'Interfaces', 'Network connections', 'Networking Config', 'Internet Connection', 'VPN Connection', 'Publish IP Address', 'Callback', 'Routing', 'Proxy' (selected), 'Security', 'IP Services', and 'Manage Config'.

Global proxy parameters

Idle connection timeout	180	seconds
Maximum connections per proxy entry	5	
Proxy External Interface (EXT)	WAN	

Proxy configuration table

	Protocol	Direction	Incoming port	Destination port	Destination IP address
Entry 1	TCP	EXT to LAN	8080	8080	10.0.120.1
Entry 2	FTP	EXT to LAN	21	21	10.0.120.1
Entry 3	UDP	EXT to LAN	1197	1194	10.0.120.2
Entry 4	TCP	LAN to EXT	85	81	62.2.3.31
Entry 5	Disabled	Disabled	0	0	0.0.0.0
Entry 6	Disabled	Disabled	0	0	0.0.0.0
Entry 7	Disabled	Disabled	0	0	0.0.0.0
Entry 8	Disabled	Disabled	0	0	0.0.0.0
Entry 9	Disabled	Disabled	0	0	0.0.0.0
Entry 10	Disabled	Disabled	0	0	0.0.0.0

Update

Figure 48: Proxy configuration page

All these parameters are in the comcfg.txt file.

Control (param name in comcfg.txt file)	Description
Proxy Configuration Enabled (ProxyEnabled)	Enables or disables the proxy feature. The proxy operation can be switched on or off at any time during the eWON operation without reboot. Any change in the configuration is applied as soon as the configuration is changed.
Idle connection timeout (ProxyIdleTO)	Each time a client opens a connection to the proxy, the connection is kept opened until the client explicitly closes it or until this timeout is elapsed without data being transferred on the socket. This is required if a client is for example switched off while the connection is active, the connection will be dropped and the memory recovered after the timeout is elapsed.
Maximum connections per proxy entry (ProxyMaxSock)	For each proxy entry, a maximum number of connections can be opened at a given time on a proxy port. This parameter defines the maximum.
Proxy External Interface (EXT) (ProxyExtIf)	Select the interface (<i>WAN</i> , <i>PPP incoming</i> or <i>VPN</i>) where the proxy rules are applied.

Table 36: Proxy Global parameters table

Control (param name in comcfg.txt file)	Description
Protocol (ProxyProto#)	This is the type of protocol that the eWON will proxy to the given server. These protocols are handled differently and must be specified in the configuration. Available protocols are : <ul style="list-style-type: none"> • Disabled (0) • UDP (1) • TCP (2) • FTP (3) Although FTP is TCP, it must be specified. The FTP proxy will work for passive and active connections. REM: If ProxyProto is set to "disabled", then the full proxy entry will be disabled, regardless of the other entry parameter's values.
Direction (ProxySide#)	The eWON's proxy is completely symmetric, it can work in both directions. Usually the user will want to proxy from the EXT to the LAN in order to access a device on the LAN that has not the eWON as gateway. But a device can also connect to a server on the EXT without having the eWON as gateway. This is true as long as the server has a fixed IP address that can be entered in the Proxy configuration. Available directions are : <ul style="list-style-type: none"> • Disabled (0) • EXT to LAN (1) • LAN to EXT (2) REM: If ProxySide is set to "disabled", then the full proxy entry will be disabled, regardless of the other entry parameter's values.
Incoming port (ProxyPort#)	Port number on which the eWON will listen. For example, if the eWON must forward ports on a web server on port 80 and the client will connect to the eWON on port 8080, then <i>incoming port</i> (ProxyPort)=8080 and <i>Destination port</i> (ProxySrvPort)=80
Destination port (ProxySrvPort#)	Port number on which the eWON will connect when it receives a connection from the proxy client. This port will be the server port on device with the Destination IP address.
Destination IP address (ProxySrvIpAddr#)	The IP Address of the server the eWON will connect to when it receives a connection on its proxy port (ProxyPort). REM: If the Destination IP address is set to 0, then the full proxy entry will be disabled, regardless of the other entry parameter's values.

Table 37: Proxy Entry parameters table

Note: There are 10 Proxy Entries, the # character found in the table above represent the index of the proxy entry, first entry has the index 1 (i.e.: ProxyProto1), the last entry has the index 10 (i.e.: ProxyProto10).

3.3.4.3.7 Security

You can define the Networking security level you need. You can set 3 levels of security.

Figure 49: Networking security page setup

Control	Description
WAN Protection level	
WAN Protection level	<ul style="list-style-type: none"> • Discard all traffic excepted VPN and initiated traffic (like outgoing eMail or putFTP) • Discard all traffic excepted VPN and initiated traffic and ICMP (Ping) • Allow all traffic on WAN connection (no protection)
Transparent Forwarding	
Require authentication	If this box is checked, the eWON will only accept to forward packets coming from the user who initiated the communication.

3.3.4.3.8 IP Services

This page allows you to redefine the standard eWON's ports.

The main interest of this feature is to be able to go through a firewall when all the ports with value less than 1000 are blocked for access over this firewall.

Figure 50: IP Services configuration

Control	Description
HTTP Web Server	
Primary HTTP port	Allows you to redefine the eWON's Primary TCP Port (whose default value is set to 80).
Secondary HTTP port	Allows you to redefine eWON's Secondary TCP Port (whose default value is set to 81). This port is never forwarded when Transparent Forwarding is enabled. This port is used to reach the eWON default Website (http://10.0.0.53:81)
FTP Server	
TCP command Port	Allows you to redefine the TCP command Port from eWON's FTP Server (whose default value is set to 21).

Table 38: IP services configuration controls

Validate your changes by clicking on the **Update** button. The changes in those fields will be taken in account only after the eWON is rebooted.

3.3.4.4 Manage Config

In this group, you will find parameters and functions allowing you to manage your eWON configuration.

3.3.4.4.1 Security

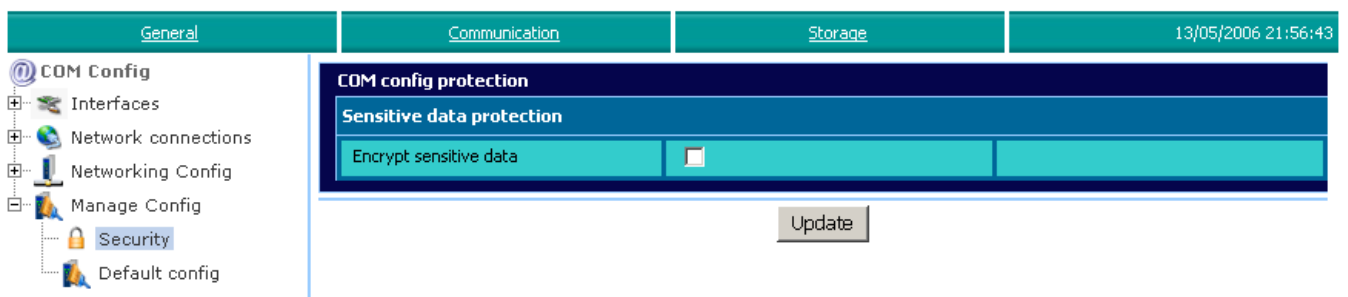


Figure 51: Manage config : Security setup

Control	Description
Encrypt sensitive data	Select this box to encrypt sensitive data (passwords, Pin code) in setup page and configuration files. The text appears as <i>dots</i> in the <i>Input Field</i> (see image below). In configuration files, the password values are crypted too (see comcfg extract below). If this box is clear, the password is readable in the Setup page and in the configuration files.

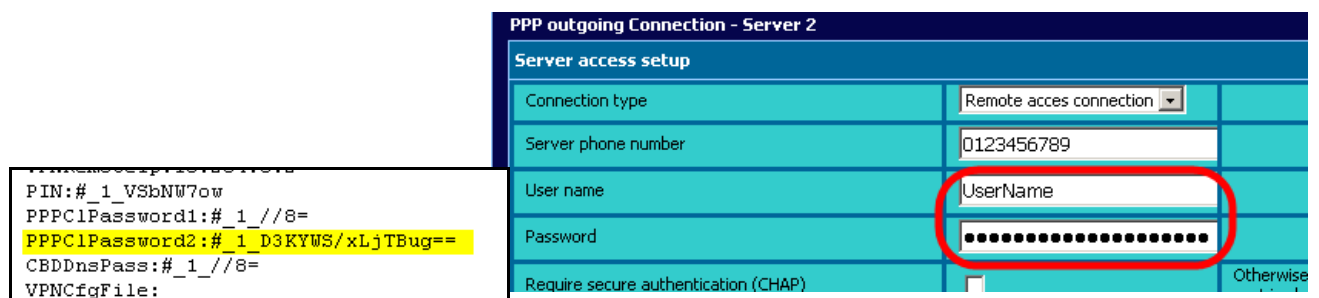


Figure 52: Encrypted Fields

3.3.4.4.2 Default Config

Using this menu, the user can return to the default communication configuration of the eWON. This will NOT modify anything in the other configurations of the eWON. The IP address will not be modified. This option requires a forced reboot of the eWON (software or hardware).

Also remember that the communication setup is NOT affected by a format of the eWON.

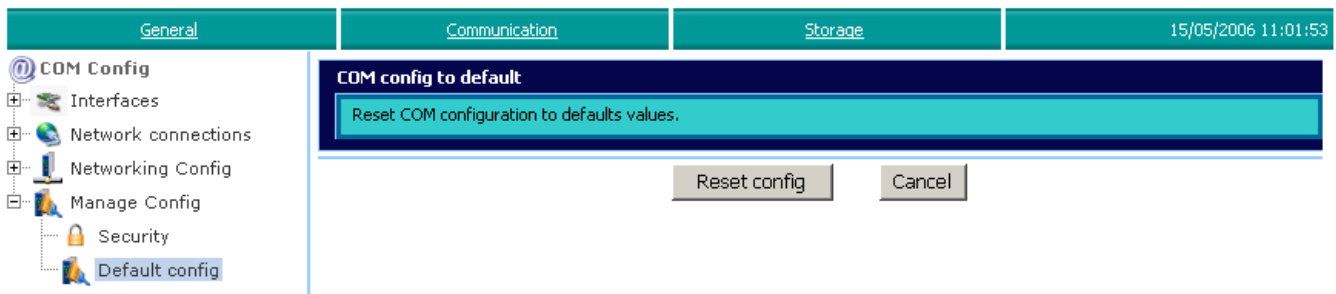


Figure 53: Reset to default COM config

3.3.4.5 STORAGE



The eWON stores configuration and recording data in its flash memory.

The eWON flash memory is divided into areas of different sizes that can be erased and reformatted individually during a partitioning operation.

note: eWONs have 8, 16 or 32 MB of Flash memory, see table below.

Flash Memory	eWON types
8 MB	<ul style="list-style-type: none"> • eWON500 • eWONx001 • eWON4002
16 MB	<ul style="list-style-type: none"> • eWONx005 • eWONx101 • eWON4102
32 MB	<ul style="list-style-type: none"> • eWONx005CD • eWONx104

Table 39: Flash memory vs eWON type

3.3.4.5.1 Memory config

There are three (or five depending on the Flash size) different ways to configure the storage from the different files from eWON, depending on the way you are going to use it (refer to the configuration table below the following screenshot).

Mem Org	/usr size (MB)	Recording size (MB)	Number of points (Hist. Rec.)	Number of events	Number of alarm hist.
<input checked="" type="radio"/>	6	1	16384	762	8192
<input type="radio"/>	5	2	73728	762	8192
<input type="radio"/>	4	3	139264	762	8192

The table shows the possible memory organisations.
If the memory organisation is changed, the new organisation will only be applied the **next time eWON boots**.
Changing the memory organisation result in a **complete format of eWON**. Everything except the COM configuration will be erased.
The current configuration is displayed in **red**

Figure 54: Storage Memory config page (16MB)

/usr (MB)	Rec. (MB)	Typical use of your eWON
6	1	You want to store a lot of user files on your eWON, but you won't create a lot of Tags.
5	2	You will store a lot of user files AND you will define a lot of Tags in your eWON.
4	3	You won't store a lot of user files on your eWON, but you will define a lot of Tags on it.

Table 40: storage configuration examples of use

Note: The storage configuration that you define in this panel will only be applied at next eWON reboot.

Note: The memory zones are erased during the reformat process.

The current configuration is displayed in **RED**.

Any change in the configuration can be undone, provided that the eWON has not been rebooted in the meantime.

Imagine that you change your configuration (i.e. you select configuration 3 while you are currently running configuration 2... As long as you have not rebooted eWON, you can choose again configuration 2. There will be no change applied in the Storage Configuration when eWON reboots. You have just to check that you select the line in which characters are displayed in red, and validate by clicking on the **Update Config** button.

Mem Org	/usr size (MB)	Recording size (MB)	Number of points (Hist. Rec.)	Number of events	Number of alarm hist.	/sys size (MB)
<input checked="" type="radio"/>	2	1	16384	762	8192	1
<input type="radio"/>	1	2	73728	762	8192	1
<input type="radio"/>	3	1	16384	762	8192	0
<input type="radio"/>	2	2	73728	762	8192	0
<input type="radio"/>	1	3	139264	762	8192	0

Figure 55: Storage Memory config page (8MB)

Mem Org	/usr size (MB)	Recording size (MB)	Number of points (Hist. Rec.)	Number of events	Number of alarm hist.
<input checked="" type="radio"/>	16	1	16384	762	8192
<input type="radio"/>	15	2	73728	762	8192
<input type="radio"/>	14	3	139264	762	8192

Figure 56: Storage Memory config page (32MB)

Flash Memory zone	Size	Description
Historical data	1 to 3 MB	Used for storing historical data. This file system is located in its own partition. This partition contains 3 files that contain circular data: <ul style="list-style-type: none"> • Incremental recordings • Events logging • Alarm history logging Each of those files receives a predefined maximum amount of space. When this amount of space is reached, then the older data are erased, in order to free space for the new data.
Retentive values	64 KB	This is a fixed flash memory block that contains the retentive values. The dimension of that block does not need to be modified.
System Config	256 KB	The System configuration is: <ul style="list-style-type: none"> • All eWON parameters (except COM) • All Tags definitions • All Users definitions
Communication Config	64 KB	The communication configuration needs to be saved in a distinct block in order to allow formatting any other data in the eWON without risking to loose contact with the device (Ethernet IP address, PPP configuration etc.). This configuration uses a fixed memory size and is stored with a special mechanism that prevents losing the configuration even if power is lost at any time during the configuration update. The only risk is to loose the last modification made after last save occurred. Communication Configuration consists in all the configuration information that appears in the ComCfg.txt file.
/usr partition	1 to 16 MB	This partition uses a different file system, allowing to create a larger number of files and to use a larger total flash memory. This file system is also very robust in case of power lost during the time when operations are performed on the files. This partition can be used through the eWON's FTP server or using the eWON's BASIC scripts. If the /sys partition does not exists, the program and the configuration are then stored in this partition (see below: /sys partition).
/sys partition	0 to 1 MB	This partition uses the same file system as the /usr partition described above. Its function is to store the program and the configuration. The configuration includes all the information that appear in the config.txt file. When this partition is formatted, the configuration and the program are erased, but the current configuration and program are still in memory. If the eWON is rebooted at that moment, it will use after restarting a default configuration and an empty program. When the configuration or the program are saved, the eWON uses this partition to save a config.sys and a program.sys files. These files are used internally by the eWON and should not be modified by the user. <i>If the partition size is set to 0 MB (eWON with only 8MB), then the partition is not created, and all /sys data are saved in the "/usr" partition.</i>

3.3.4.5.2 Erase & Format

The screenshot shows the 'Erase & Format' configuration panel. The left sidebar has 'Storage settings' expanded, with 'Erase & Format' selected. The main panel has a teal header with 'General', 'Communication', and 'Storage' tabs, and a timestamp '15/05/2006 11:23:55'. The 'Erase & Format' section contains the following options:

- Format All partitions**: ☐ Format /usr and /sys (if present)
- Format /sys partition**: ☐
- Format /usr partition**: ☐
- Erase config files**:
 - Erase config**: ☐ All configuration except COM configuration (you will be logged)
 - Erase program**: ☐ Basic program
- Format Historical Recording File System**: ☐
 - Erase "Historical Recording" file**: ☐ Erase ircall.bin
 - Erase "Events" file**: ☐ Erase events.txt file
 - Erase "Alarms History" file**: ☐ Erase hst_alm.txt file
- Clear scheduled action**:
 - Clear pending actions**: ☐ Clear **pending** actions (except action currently 'in progress') from sstat.htm
- Confirm operation**:
 - Password required:** Enter your password

At the bottom are 'Update Config' and 'Cancel' buttons.

Figure 57: Erase & Format panel

This control panel function is to allow you to erase some parts of the eWON storage area.

Control	Description
Format All partitions	
Format All partitions	Validating this checkbox will result in formatting /usr and /sys partitions.
Format /sys partition	Validating this checkbox will result in formatting /sys partition.
Format /usr partition	Validating this checkbox will result in: Formatting only /usr if /sys is not stored in it Formatting /usr AND /sys if you have chosen a storage configuration with /sys set to "0"
Erase config files	
Erase config	Validating this checkbox will result in erasing the eWON configuration, except for its communication information (comcfg.txt). Clicking on Execute after having selected this checkbox will disconnect you from your current eWON session.
Erase program	Validating the checkbox will result in erasing the eWON Basic script file program.bas.
Format Historical Recording File System	
Format Historical Recording File System	Validating this checkbox will result in erasing the 3 files that stores the eWON's internal history, which means all of the three following controls together in this table.
Erase "Historical Recording" file	Validating the checkbox will result in erasing the binary format ircall.bin file that contains the binary values of all the Tags that are defined in the eWON.
Erase "Events" file	Validating the checkbox will result in erasing the text format events.txt file that contains the history of all of the (maximum) 762 last events that have been logged in eWON.
Erase "Alarms History" file	Validating the checkbox will result in erasing the text format hst_alm.txt file that contains the history of the alarms for the Tags that have been defined in the eWON.

Clear scheduled action	
Clear pending actions	<p>Validating this checkbox will result in erasing from the sstat.htm file the eWON actions that are not currently in progress, that means all the actions that are completed (whatever successful or not).</p> <p>Note: as sstat.htm is a "virtual" file, which means that its information are stored in the volatile memory from eWON, clearing this file does not impact the memory file system from eWON. As this command is an exception in this page, it has been placed here for obvious ergonomic reasons.</p>
Confirm operation	
Password required	Your password is required in order to confirm your changes. Those changes will be validated when you click on the Execute button.

3.3.4.5.3 Features

Figure 58: Features setup page

There is some "options/restrictions" available on the firmware. To activate these features, you need to enter an "enable code".

3.3.4.5.4 REBOOT

Figure 59: eWON REBOOT Request page from the Storage menu

If for any reason you want to restart your eWON, then you just have to click on the **REBOOT** button, and the reboot process will begin.

Your eWON will be accessible again when restart is completed.

For further information on the different ways to reboot the eWON, please refer to chapter "Reboot" on page 15.

3.4 Tag Setup

3.4.1 Tag definition: Introduction

The eWON Monitoring Web Interface features are based on:

- The configurable monitoring of Tags
- The execution of scripts

All the variables monitored by the eWON are defined as "Tags". A Tag is a Boolean or Float value changing with time and coming from a data-source.

Typical data-sources are:

- eWON internal Inputs/Outputs
- Remote Inputs/Outputs (modbus, UnitelWay, ...)
- eWON memory Inputs/Outputs (updated by script)

The data source is called an "IO Server". An IO Server is the interface between the changing value and the eWON monitoring engine. It is a kind of driver. Any variable from any data source must have a common representation for all IO Servers in order to define common interface in the eWON.

The *data-source* representation in the eWON uses 3 fields for the definition of a Tag:

- The IO Server Name
- The Topic name
- The Item Name

A Tag's data-source will be uniquely identified with these 3 parameters.

IO Server name	Is a kind of driver name. For each IO Server there is a specific Topic Name and Item Name syntax. The following drivers are available: MODBUS, EWON, MEM, NETMPI, UNITE (Unitelway), DF1, FINS, S7 3&400(MPI), S7 200(PPI) and S5-AS511.
Topic Name	Is used to group items inside an IO Server, for example the memory an IO Server uses the blank topic ("") and the retentive topic ("ret"). All the Tags of the MEM IO Server defined in the "ret" topic will have their value saved and restored when the eWON boots. All the IO servers do not use Topic Name. In that case Topic Name must be empty.
Item Name	The item name is a string of characters; its syntax is specific to each IO Server. The Item Name describes the physical variable to monitor using the IO Server.

Table 41: Tag's data-source parameters

For example, the MODBUS IO Server needs to poll registers or coils from a slave, so it uses an item name representation to define the register type, register address and slave address. (Example "40001,5" => Where 4 means read write register, 0001 is the register number and 5 is the slave Modbus address).

A description of the different IO Server syntax is given in chapter "The eWON IO Servers" on page 85. Once a Tag is configured with its Server Name, Topic Name and Item Name, it is given a Tag name that will be used everywhere in the eWON.

3.4.1.1 Tags are stored as Float

Internally, all the tags are stored in single precision FLOAT format (IEEE float representation).

This means that you can only expect a maximum precision of 7 decimal digits.

That's why, the 32 bits Integer data read by an IOserver will be automatically converted in the nearest float number representation. For a huge number, it will mean a truncation (ex: integer value 1600000015 will be stored as float 1600000000.0).

3.4.1.2 Tags validation

For optimisation purpose and since firmware version 5.2, the eWON can detect if tags are valid or not, **and disables the polling of invalid tags**.

By default, this feature is not activated. See "Global Config" on page 86 to enable it.

At the creation of the Tags or at the initialisation of an IO Server, all tags are considered as valid and are polled.

If repetitive errors occur on some Tags, these tags will be considered as invalid and **will not be polled anymore !**

A specific error message will be written in the event log.

This message is "Protocol Error while reading Tag (*TagName* - Polling disabled for this tag)" (see example in figure below)

Event Log	Status	Scheduled Actions	Real Time Log	15/04/2007 18:03:33
Event log	Event Class: All Events	Reporting Level: Warning	Per Page: 20	Update
<< Previous Page Next Page >>				
Time	Event	Description	Originator	Help
15/04/2007 17:58:48	26826	stdios-Protocol Error reading Tag (UNITE - MW2 - Polling disabled for this tag)	unite	
15/04/2007 17:58:48	26341	xway-The request was refused by the server	unite	

Figure 60: Tag validation - error event

Invalid tags will be polled again when:

- the IO Server is started (i.e.: after a IO Server modification)
- a manual INIT of the IO Server (See "IO Server Init" on page 86)
- a modification of the Tag (in the *I/O Server Setup* part of Tag Setup)

3.4.1.3 Tags monitoring and handling

The eWON engine can handle the following operations on the Tags:

Operation	Description
Alarm monitoring	Check for low and high alarm levels or Boolean alarm level and management of alarm acknowledgement , alarm historical logging and action on alarm (Email, SMS, etc.)
Historical logging	Tags can be monitored and changes on a Tag can be saved in the Flash File System. Storage can be based on change threshold or at regular interval.
Real Time logging	A Tag history can be kept in memory for an amount of time with a given time interval. This operation is volatile and does not involve any flash storage.
Modbus TCP publishing	All the Tags can be given a Modbus address and can be read using the Modbus TCP protocol by and external modbus TCP master.
Tag grouping	Tags can be organized by page for easier handling and viewing.
Script Access	All the Tags values and attributes can be read or changed from script.

Table 42: Tags operations handled by the eWON


3.4.2 Tag definition: Setup

The Tag Setup page, reachable by clicking on the **Tag Setup** item of the **Configuration** menu, offer the possibility to build the eWON Tag's dictionary.

The Tag name dictionary is the eWON central database where you have to define all the Input / Output (internal – available on the eWON – or external – through extension bus) that you want the eWON to monitor. If your Input/Output is not defined by a Tag, you will not be able to address it.

The Tag configuration includes two parts:

- The complete Tag configuration except for the actions to execute in case of an alarm.
- The alarm action list.

The first part of the configuration is accessed through the Tag hyperlink; the second part is accessed with the  icon next to the Tag hyperlink.

Note: In the header menu of the Tag edition, a combo box appears with a list of pages (please refer to chapter "Pages configuration" on page 79). Only the Tags of the selected page will be displayed in the list, except if "ALL" is selected.

Important: If a Tag is created in a different page than the page being displayed, it will not appear in the list, although it is present.









eWON		Tag Setup	System Setup	IO Server Config	Main Menu		
eWON-V5		Script Setup	Users Setup	Pages List			
Delete Selected Tag		Create New Tag (like first selected)		Page: All	Update		
03/05/2006 11:10:48							
	L	Tag Name	Description	Type	IO Server	Topic	IO Address
<input type="checkbox"/>	X	 Air_Valve	Air valve to reduce tank internal pressure	Boolean	MEM		Air_Valve
<input type="checkbox"/>	X	 Input_Faucet	input of the Tank	Boolean	MEM		Input_Faucet
<input type="checkbox"/>	X	 Output_Faucet		Boolean	MEM		Output_Faucet
<input type="checkbox"/>	X	 Tank_Level	Level of the Fuel Tank	Analog	MEM		Tank_Level
<input type="checkbox"/>	X	 Tank_Pressure	Pressure of the Fuel Tank	Analog	MEM		Tank_Pressure
<input type="checkbox"/>	X	 Tank_Temperature	Temperature of the Fuel Tank	Analog	MEM		Tank_Temperature
<input type="checkbox"/>		 wagoDI1		Boolean	MODBUS	b	10001,21

Figure 61: eWON Tag Setup page

- **To EDIT a Tag**
Click on the link in the *Tag name* column.
- **To EDIT a Tag ALARM ACTION**
Click on the icon  next to name of the Tag link.
- **To DELETE a Tag**
Click on the check box near the Tag name and then click on the *Delete Selected Tag* link.
- **To ADD a Tag**
Click on the *Create New Tag* link.

If you want to create a new Tag that has nearly the same property as another Tag in the list, then validate the checkbox that stands at the left side of the "source" Tag's name and then click on the **Create New Tag** link. Doing that, all field properties of the new Tag will be automatically filled with the selected Tag's properties.

Note: "the first selected" means that if several Tags are selected, then the Tag that is cloned will be the first among the Tags that have been selected.

3.4.2.1 Tag main edit window

You will have access to the Tag main setup page by clicking on the **Create New Tag** link, or by editing an existing Tag when clicking on its name (the content of this page differs accordingly to your eWON's version: Historical Data Logging and Real Time Logging is not available on all the eWONs): see Table 187 on page 203

Identification			
Tag Name:	<input type="text"/>	Page:	Default <input type="button" value="v"/>
Tag Description:	<input type="text"/>		

I/O Server Setup			
Server Name:	MEM <input type="button" value="v"/>	Topic Name:	<input type="text"/>
Address:	<input type="text"/>	Type:	Analog <input type="button" value="v"/> Force Read Only: <input type="checkbox"/>
eWON value = IO Server Value * <input type="text" value="1"/> + <input type="text" value="0"/>			

Tag Visibility	
Global settings	
Published value:	eWON value * <input type="text" value="1"/> + <input type="text" value="0"/> REMARK: Value published is unsigned 16Bits for ModbusTCP and signed 32 bits for SNMP
Modbus TCP	<input type="checkbox"/> Enabled
Register	<input type="text" value="1"/> <input type="checkbox"/> Consider as float register
SNMP	<input type="checkbox"/> Enabled
OID	<input type="text" value="1"/> Value published: .1.3.6.1.4.1.8284.2.1.3.1.11.1.4.OID (Integer32)
Instant Value	
<input type="checkbox"/> Group A <input type="checkbox"/> Group B <input type="checkbox"/> Group C <input type="checkbox"/> Group D	

Alarm Setup <input type="checkbox"/> Alarm Enabled			
Alarm Level Low:	<input type="text" value="0"/>	Alarm Level High:	<input type="text" value="0"/> Value Deadband: <input type="text" value="0"/>
Alarm Level LowLow :	<input type="text"/>	Alarm Level HighHigh :	<input type="text"/> Leave empty HiHi if unused and LoLo if unused
Boolean Alarm Level:	<input type="button" value="0"/> <input type="button" value="v"/>		
Activation Delay:	<input type="text" value="0"/> sec	Auto acknowledge:	<input type="checkbox"/> (Auto ACK on RTN)
Alarm Hint:	<input type="text"/>		

☐ Then Edit Notification

Figure 62: eWON Tag main configuration page - eWONs that does not allow logging feature

Identification			
Tag Name:	<input type="text"/>	Page:	Default <input type="button" value="v"/>
Tag Description:	<input type="text"/>		

I/O Server Setup			
Server Name:	MEM <input type="button" value="v"/>	Topic Name:	<input type="text"/>
Address:	<input type="text"/>	Type:	Analog <input type="button" value="v"/> Force Read Only: <input type="checkbox"/>
eWON value = IO Server Value * 1 <input type="text"/> + 0 <input type="text"/>			

Tag Visibility	
Global settings	
Published value:	eWON value * 1 <input type="text"/> + 0 <input type="text"/> REMARK: Value published is unsigned 16Bits for ModbusTCP and signed 32 bits for SNMP
Modbus TCP <input type="checkbox"/> Enabled	
Register	1 <input type="text"/> <input type="checkbox"/> Consider as float register
SNMP <input type="checkbox"/> Enabled	
OID	1 <input type="text"/> Value published: .1.3.6.1.4.1.8284.2.1.3.1.11.1.4.OID (Integer32)
Instant Value	
<input type="checkbox"/> Group A <input type="checkbox"/> Group B <input type="checkbox"/> Group C <input type="checkbox"/> Group D	

Alarm Setup			
<input type="checkbox"/> Alarm Enabled			
Alarm Level Low:	0 <input type="text"/>	Alarm Level High:	0 <input type="text"/> Value Deadband: 0 <input type="text"/>
Alarm Level LowLow :	<input type="text"/>	Alarm Level HighHigh :	<input type="text"/> Leave empty HiHi if unused and LoLo if unused
Boolean Alarm Level:	0 <input type="button" value="v"/>		
Activation Delay:	0 <input type="text"/> sec	Auto acknowledge:	<input type="checkbox"/> (Auto ACK on RTN)
Alarm Hint:	<input type="text"/>		

Historical Logging	
<input type="checkbox"/> Historical Logging Enabled	
Logging Deadband:	-1 <input type="text"/> (put a negative value to disable deadband logging)
Logging Interval:	0 <input type="text"/> Seconds (set to 0 will enable only Deadband logging)

Real Time Logging	
<input type="checkbox"/> Real Time Logging Enabled	
Time Span:	600 <input type="text"/> Seconds
Logging Interval:	10 <input type="text"/> Seconds

☐ Then Edit Notification

Figure 63: eWON Tag Main Configuration page - eWONs that allow logging feature

Control	Description
Tag general properties	
Tag name	<p>Name of the Tag</p> <p>The name of the Tag will be used for any reference to the Tag when using the export function or the script function.</p> <p>-This Information will be included in the alarm email</p> <p>Note: the Tag's name cannot contain:</p> <ul style="list-style-type: none"> spaces \$ character " characters <p>Maximum length for a Tag's name is 64 characters</p>
Tag Description	<p>A free text to describe the meaning of the Tag. Useful to clarify the meaning of an alarm.</p> <p>-This Information will be included in the email that you can send on alarm.</p>

Table 43: Tag's general properties controls

I/O Server Setup	
Server Name	<p>The IO server name is the Data source of the Tag name. Six data sources are available:</p> <ul style="list-style-type: none"> 'eWON' for all the eWON internal IO (please refer to chapter "The eWON IO Servers" on page 85) 'MODBUS' for IO located on the extension bus (please refer to chapter "Modbus IO server" on page 88) 'MEM' for virtual IO used by script function (please refer to chapter "MEM IO Server" on page 124) 'NETMPI' for IO located on the extension bus (please refer to chapter "NETMPI IO Server" on page 94) 'UNITE' for IO located on the extension bus (please refer to chapter "UNITE IO Server" on page 96) 'DF1' for IO located on the extension bus (please refer to chapter "DF1 IO Server" on page 100) 'FINS' for IO located on the extension bus (please refer to chapter "FINS IO Server" on page 106) 'S5-AS511' for IO located on the extension bus (please refer to chapter "S5-AS511 IO Server" on page 110) 'S73&400' for IO located on an MPI bus (please refer to chapter "S7-300&400 (MPI/Profibus - ISOTCP)" on page 125) 'S7200' for IO located on an PPI bus (please refer to chapter "S7-200 (PPI - ISOTCP)" on page 130)
Topic Name	<p>Used to apply a common configuration to several Tags.</p> <p>Please refer to chapter "Tag definition: Introduction" on page 67</p>
Address	<p>Please refer to chapter "Tag definition: Introduction" on page 67</p> <p>Note: for memory Tag (MEM IO server) this field can be left empty. Although when editing a memory Tag, the Tag Name will be found here, this field is insignificant.</p>
Type	<p>Defines the Tag name type: Analog or Boolean. Analog enables the Tag to take float values coded on 4 bytes.</p> <p>Boolean only return value 0 or 1. If the IO server returns a value equal to 0, the Boolean value is 0. If the IO server returns a value different from 0 the output value is 1.</p>
Force Read Only	<p>Allows the disabling of the Update function in the <i>View IO</i> page. This is useful if you want to monitor a read/write Tag. The Tag is still read/write for BASIC operations.</p>
eWON value	<p>Defines the offset and scale factor to be applied to the IO value coming from the server. The offset and scales are float values and negative values are accepted. The Tag value will be: $TAGval = IOSERVERval * scale + offset$.</p>

Table 44: IO server configuration controls

Tag Visibility	
Published value	
Modbus TCP visibility	Each Tag in the eWON can be accessed by a modbus TCP master. If the Tag must be visible: Enable this checkbox.
Register	Address of the register, starting with 1. Only the register address has to be specified, the type of Tag (coil, contact, Input register or Holding register) is obtained from the Tag type (Analog or Boolean) and the Tag Read Only or Read/Write property (obtained from the IO server).
Consider as float	If this option is checked, then 2 consecutive 16 bits registers will be reserved and the value will be output as a 4 bytes IEEE float in those 2 registers (standard Modbus float representation). If the Tag is published as integer it may need to be scaled to fit the 16 bits modbus register. This operation will be applied to the Tag value to publish it.
SNMP Visibility	If this is checked, the Tag can be seen by the SNMP manager. The OID of the Tag can be defined. The base OID is already defined, the only parameter is the end of the OID.
Instant Value	Instant value means values of Tags at a given time. The Tag's instant values are stored in the inst_val file (available in txt and binary format from the Files Transfer link from the Main menu navigation bar from eWON). The 4 checkboxes that match the groups that you want to choose will work accordingly to the \$ft Export Block Descriptor Tag that is described in chapter "\$dtIV [Instant Values]" on page 183 in this manual. You will find there detailed information about Instant Value too.

Table 45: Tag visibility controls

Alarm Setup	
'Alarm Enabled' Check Box	Check if you want to generate an alarm on the current Tag name.
Alarm level low	Low "warning" threshold value for alarm detection.
Alarm level high	High "warning" threshold value for alarm detection.
Alarm level lowlow	Low "danger" threshold value for alarm detection.
Alarm level hihi	High "danger" threshold value for alarm detection.
Value Dead band	The dead band is the difference between the alarm level and the RTN level (Return To Normal). e.g. if the alarm value is 20°C with a DeadBand=1, the alarm is triggered when the Temperature crosses this 20°C boundary. On the other hand, the AlarmStatus will be RTN when the temperature passes below 19°C (20-1).
Boolean Alarm level	The alarm value ('0' or '1') of a Boolean Tag name –not applicable for analog Tag name-.
Activation delay	Time in seconds for which the Tag has to be out of threshold before declaring the Tag is in an alarm state. (This is mainly to avoid non significant alarms)
Auto acknowledge	If checked, the alarm will be automatically acknowledged when the alarm state goes to RTN value. Thus, the alarm is directly ended.
Alarm Hint	Information related to the alarm action - This Information will be included on the alarm email-

Table 46: alarm setup configuration controls

• **Historical and real-time logging:**

Those fields display only for some eWON's versions (c.f. "Tags monitoring and handling" on page 68)

Historical and real-time logging	
Historical logging enabled	If checked, the Tag values will be logged in a circular file. Warning: This is a non-volatile logging; data are stored in the flash file system. All the data are stored in the same file, the maximum number of values that can be saved is from 16384 to 139264, depending on the way you have set up the resources storage in the eWON (when maximum size is reached, then the older data will be erased first). If one Tag "a" is recorded very often (every seconds) and another Tag "b" is recorded rarely (every day), you may have your Historical Log filled with a lot of tag "a" and few (or none) tag "b" because of the circular storage mechanism.
Logging dead band	Defines the dead band of the Tag's incremental recording (use a negative value to disable it)
Logging Interval	Defines the interval, in seconds, for the Tag recording (set to zero to disable the logging interval). Can be used at the same time as <i>logging dead band</i> .
Real time enabled	If checked, the Tag values will be logged in memory. Real time logging is different from historical logging because data are saved in a circular memory buffer. The other difference with historical time logging is that incremental recording is not possible, only fixed interval recording can be performed.
Time span	Defines the total logging window time in seconds.
Logging Interval	Defines the interval, in seconds, of the Tag recording

Table 47: Historical and real-time logging controls

3.4.2.1.1 Publish as Modbus TCP

This feature allows to access a Tag Value through Modbus/TCP. In that configuration, the eWON acts as a slave. Actually, there is no data map as in most PLC, instead of that you define Tag by Tag its Modbus TCP address.

3.4.2.1.1.1 Defining the Modbus TCP address

There are 4 types of Modbus variable, Contact (RO), Coil (RW), Input Register (RO), Holding register (RW). The type selected for the Tag that you want to publish will depend on its type:

Tag property	Modbus data type
Boolean, RO	Contact
Boolean, RW	Coil
Analog, RO	Input register
Analog, RW	Holding register

Table 48: the 4 Modbus variable types

Usually, the RO or RW property of a Tag is obvious. But in case of doubt, you can confirm the type by checking the View IO for the Tag:

- **Remove the "Force Read Only" option in the Tag configuration (disabled by default).**
- **Check the View IO page, if the Tag has an update field, it means it is a RW Tag otherwise the Tag is RO.**
- **The address selected will be the address of the Modbus 16 bit register. The address range starts with register 1 (in the Modbus frame, eWON register 1 is transmitted as 0).**
- **Publish as float**

The eWON supports accessing Tag values as float registers. The float is published with the IEEE representation and the value can be read on 2 consecutive registers, with the first register starting at the user defined address.


3.4.2.1.1.2 Modbus TCP rules

- **When accessing Modbus registers or coils that are not mapped to an eWON register, the returned value is 0.**
- **Maximum number of registers readable in 1 request: 25**
- **Maximum number of coils readable in 1 request: 2000**

3.4.2.2 Tag "Alarm Action" edit window

Alarm action can be one of the following:

- Send an Email
- Send an SMS
- Send a file to an FTP server
- Send an SNMP Trap

The Alarm action window is accessed with the icon  next to the Tag's link.

Each of the four actions can be triggered with the following events:

- The alarm occurs (ALM) - low, lowlow, high or hihi (The alarm will also be triggered when changing the alarm level)
- Acknowledging (ACK)
- Return to normal level (RTN)
- End of Alarm (END)

Alarm Notification for tag: <u>test</u>	
Email upon <input checked="" type="checkbox"/> ALM <input type="checkbox"/> ACK <input type="checkbox"/> RTN <input type="checkbox"/> END	
Short Message:	<input type="checkbox"/> Format as short message
E-mail to:	<input type="text" value="ewon@actl.be"/> <small>ex: usr1@dom.ci,usr2@dom.ci</small>
E-mail CC:	<input type="text"/>
E-mail Subject:	<input type="text" value="eWON events file"/>
E-mail Attachment(s):	<input type="text" value="\$ [\$dtEV]"/> <small>ex: 8[\$dtEV]</small>
SMS upon <input checked="" type="checkbox"/> ALM <input type="checkbox"/> ACK <input type="checkbox"/> RTN <input type="checkbox"/> END	
SMS Destination:	<input type="text" value="0475112233,ucp,0475161622,proximus"/> <small>ex: 0456334433,ucp,0567112200,pass</small>
SMS Subject:	<input type="text" value="SMS alarm"/>
Put FTP upon <input type="checkbox"/> ALM <input type="checkbox"/> ACK <input type="checkbox"/> RTN <input type="checkbox"/> END	
Destination File Name:	<input type="text"/>
File Content:	<input type="text"/>
SNMP Trap upon <input type="checkbox"/> ALM <input type="checkbox"/> ACK <input type="checkbox"/> RTN <input type="checkbox"/> END	
Trap Subject:	<input type="text"/>
<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

Figure 64: Alarm notification setup

3.4.2.2.1 Email on alarm configuration

The required configuration if an email must be sent in case of alarm. If an email must be sent through PPP, the system configuration (Main and COM) must also be set up.

Alarm action Properties	Description
Email upon	Checks the alarm states triggering an email (ALM, ACK, RTN, END).
Short Message	In some cases it is useful to have the whole message sent in the subject. For example if you need to route email to SMS. Usually this checkbox is disabled.
Email To	List of TO email address comma (, or ;) separated.
Email CC	List of CC email address comma (, or ;) separated.
Email subject	Will be the subject of the email (except if short message is selected).
Email attachment	Body text of the email. This text can include Export Block Descriptor inline with text or as attachment. Attachments to include in the Email must follow the syntax: &[EXPORT_BLOC_DESCRIPTOR_1] &[EBD_2]... There can be as many attachments as required. EXPORT_BLOC_DESCRIPTOR syntax is described in chapter "Export Block Descriptor" on page 167 Example: &[\$dtRTGA_AN01\$ftG] &[\$dtEV\$ftT] Will export Real time data of GA_AN01 as a graph and the event log file as a text file.

Table 49: Email on alarm configuration controls**3.4.2.2.2 SMS on alarm configuration**

Warning: Sending an SMS is only possible from an eWON that embeds a modem (c.f. Table 187 on page 203)

Alarm action Properties	Description
SMS upon	Checks the alarm states triggering an SMS (ALM, ACK, RTN, END).
SMS Destination	A list of SMS_RECIPIENT; SMS_RECIPIENT;... See below for the SMS_RECIPIENT syntax.
SMS Subject	Will appear at the beginning of the SMS message.

Table 50: SMS on alarm configuration controls

3.4.2.2.2.1 SMS_RECIPIENT: syntax

The SMS_DESTINATION defines the phone number of the SMS recipient.

In order to reach an SMS recipient, an SMS server must be called and the correct protocol must be used with that server. The server phone number depends on the GSM operator and the protocol used will be one of the 2 standard UCP or TAP protocol. A table with the SMS protocols and server phone numbers is available on <http://www.ewon.biz/DocSMS.htm>.

To introduce a pause in the number composition, use '+' in the number.

SPECIAL CASE FOR FRANCE USERS: as ucp and tap server is not available in France, the InfoZ protocol is available for eWONs embedding an analog modem. In that case the server phone number is 0. If a number has to be dialed to access the network it can be entered before the 0.

Example: if 9 must be dialed to leave PABX the syntax is 0407886633,ifz,90
if a pause is required to leave the PABX, the syntax will be 0407886633,ifz,9+0

See also www.infoz.fr for details about the InfoZ service.

The syntax for SMS_RECIPIENT is:

• DDDD,TTT,MMM,PPP

Or

• DDDD,TTT,MMM

DDDD	Destination phone number	
TTT	Protocol type, must be one of the 4 following values:	
	ucp	It is possible to add a word datasize and parity specification. The generic syntax is ucpDP : with Datasize D= 8 or 7 with Parity P= n: none, o: odd, e: even Examples: ucp7o ucp7e ucp7n ucp8n (default value)
	tap	It is possible to add a word datasize and parity specification. The generic syntax is tapDP : with Datasize D= 8 or 7 with Parity P= n: none, o: odd, e: even Examples: tap7o tap7e tap7n tap8n (default value)
	gsm	
	ifz	
MMM	Server phone number, see your GSM provider or for example: http://www.woodstone.nu/salive/PagerSettings.html If the previous field is GSM or IFZ, the server must be set to "0"	40 char max
PPP	A password is sometimes required by the GSM provider.	30 char max

Table 51: the SMS_recipient syntax

Examples:

SMS on alarm "SMS Destination" syntax	Explanations
0407886633,ucp,0475161622,proximus	ucp protocol requires the use of a password. In this case, the password is "proximus" See in the above table for the word datasize and parity specification
0407886633,tap,0475161621	tap protocol does not require to enter a password. See in the above table for the word datasize and parity specification
0407886633,gsm,0	Syntax for sending an SMS from an eWON with a GSM/GPRS modem Note: we advise you to exclusively use this syntax to send an SMS from an eWON that embeds a GSM modem (not tap or ucp protocols).
0407886633,ifz,0	Syntax for sending an SMS to a GSM modem (France)

Table 52: SMS destination syntax examples

All the above strings are valid. Concerning the three last examples in the list, the last "," is not mandatory as there is no password.

Important: Password is case sensitive.

When defining a phone number with a modem the "," is often used to insert a pause during the dialing operation. As the eWON uses the coma as a separator, the pause dial sign is replaced by a +.

For example the 0+0407886633 would dial a 0, then insert a 1 second pause, then dial 0407...

The gsm protocol attribute can be used in order to send the SMS directly through the GSM network, not using an SMS server. In this case, there is no server needed. This is valid only if the eWON embeds a GSM or GPRS modem.

BENELUX only: SEMASCRIP

It is possible to send Semascript/ SemaDigit to a Semaphone inside of the Benelux area, by using the Belgacom server.

Example:

You want to send a semadigit to number 0498373101...

You must call the server at phone number 0458500001 (0+0458500001 if you must first dial a 0 and wait a pause)

Keep only the last 7 digits of the semaphone destination number, and use TAP protocol with "7e1":

```
sendsms "8373101,tap7e1,0458500001","0498373101"
```

if eWON is behind a PABX and 0 must be dialed first use:

```
sendsms "8373101,tap7e1,0+0458500001","0498373101"
```

FRANCE only: ALPHAPAGE

As for SEMASCRIP, it is possible to send ALPHAPAGE messages to ALPHAPAGE pagers in France, by using the emessage server: the server is managed by a German firm called emessage, (<http://www.emessage.de/en/index.html>). As for the SEMASCRIP users, the ALPHAPAGE users have chosen to keep on using a pager, with which the broadcasting coverage is better than with the GSM network (the users are sure to receive the message, that is not always the case with SMS).

The used protocol is TAP. The operating mode is the same as for SEMASCRIP:

You want to send an ALPHAPAGE message to number 0612345678...

You must call the server at phone number 0836601212 (0+0836601212 if you must first dial a 0 and wait a pause)

Keep only the last 7 digits of the alpage destination number, and use TAP protocol with "7e":

```
sendms "2345678,tap7e,0836601212"
```

if eWON is behind a PABX and 0 must be dialed first use:

```
sendms "2345678,tap7e,0+0836601212"
```

See also:

The BASIC function SENDSMS and SENDMAIL in the "eWON Programming Manual".

3.4.2.2.3 FTP on alarm configuration

Alarm action Properties	Description
Put FTP upon	Checks the alarm states triggering the Put FTP (ALM, ACK, RTN, END)
Destination file name	Name of the file to create on the FTP server. The name can contain path specification.
File content	The file content can be static or dynamic (see below)

Table 53: alarm action properties

3.4.2.2.3.1 File content:

If a standard text is put in the File Content field, the file built will receive that static text as content. If the File content has the following form, one or more file(s) will be written with a dynamic content:

[EXPORT_BLOC_DESCRIPTOR_1] [EBD_2]...

The number of EXPORT_BLOC_DESCRIPTOR is not limited. The EXPORT_BLOC_DESCRIPTOR syntax is described in chapter "Export Block Descriptor" on page 167.

If the *\$fn* field is used with multiple Export blocks, the "Destination File Name" property MUST be empty.

3.4.2.2.4 SNMP Trap on alarm configuration

If a trap has to be sent on an alarm, the checkbox corresponding to triggering an event has to be selected.

The edit box allows entering a specific text that will be displayed in the Trap event of the SNMP manager. The text string is limited to 256 chars.

All of the hosts that have been defined in the **SNMP Setup** menu (see chapter "SNMP Setup" on page 21) will receive the generated alarm Trap.

3.5 Pages configuration

Page definitions are used in eWON for two purposes:

- **Restrict user rights to specific directories in the user definable web site.**

See also chapter "Users Setup" on page 8.

- **Organize Tags in pages to ease viewing and restrict user access to specific Tags.**

See also chapter "Users Setup" on page 8.

The *Pages list* setup that is accessed from the configuration navigation bar of the eWON looks as follows:

Pages list	
Default Page	Default
User Page 2	System
User Page 3	
User Page 4	
User Page 5	
User Page 6	
User Page 7	
User Page 8	
User Page 9	
User Page 10	

If you change the name of a page, all users who had access to the old page will have access to the new page, if you clear the name of a page, all users who had access to that page will have access to the default page instead.

Update

Cancel

Figure 65: Pages list setup

You may enter up to 10 user defined pages.

When Tags are defined in a specific page and the name of the page is modified, then the same Tags will belong to the renamed page. In other words, the Tag actually belongs to a page number, **EXCEPT** if the name of the page is changed to <nothing> (empty field). In that case, all the Tags that belonged to the previous page will return in the default page. All the users who had access to that page only will have access to "All pages".

Any text can be entered for the page name, but if a page name is used for directory restriction, it must comply with the directory syntax.

3.6 IO servers setup

Please refer to chapter "The eWON IO Servers" on page 85 for a complete description of IO server and their configuration.

3.7 Script Setup

The *Script setup* page that you can reach by clicking on the **Script Setup** link from the configuration navigation bar is used to create, modify or erase the scripts in the eWON and to test them.

Basic is the language that is used to write these scripts.

Further information about the structure and the syntax of this language is given in "eWON Programming Manual".

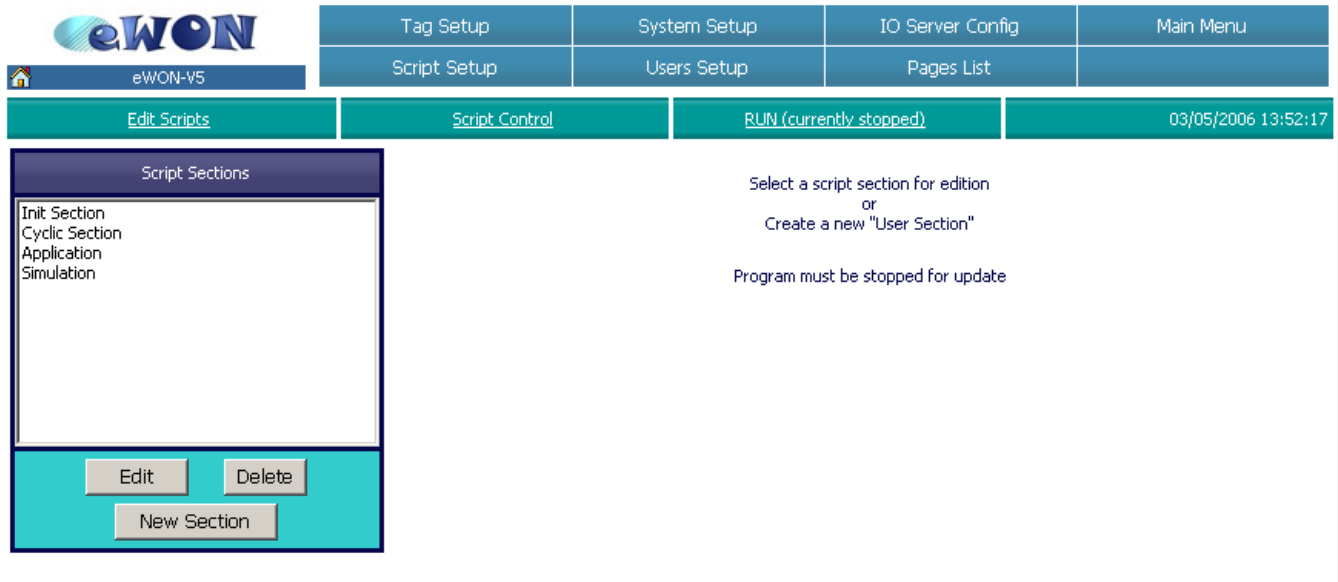


Figure 66: eWON script section page

The 3 available links in the script setup page are:

- The **Edit Scripts** link: to create, modify or delete the scripts
- The **Script Control** link: to test the scripts and enter one-shot commands
- The **Run/Stop** link: to run or stop the Basic scripts

3.7.1 The Edit script link

The 2 predefined scripts that are present in the eWON are:

- The **Init section**, which is executed once at the startup of the eWON.
- The **Cyclic section**, which is executed cyclically by the eWON.

This page is used to create, delete or edit script sections.

- The cycle time of the eWON BASIC is not pre-determined!
- This cycle depends on script itself.
- If well programmed, you can achieve the cycle time within one second.

- To edit a script section

Select the script that you want to display the code of from the *Script Sections* list, and then click on the *Edit* button, in order to display it in the edition window:

Figure 67: eWON Edit script section page

Click on the **Update** button to validate your modifications or on the **Cancel** button to quit without saving.

- To erase a script section:

Select the script section to delete and click on the **Delete** button.

- To create a new script section:

Click on the **New Section** button.

Enter the name of the script in the **Script Name** field and the code to execute in the blank edition area.

Figure 68: eWON new script section page

Click then on the **Update** button to validate your script, or on the **Cancel** button to quit without saving.

3.7.2 The Script control link

This page is used to monitor the result of the script execution and to execute some commands manually. You can use this page to easily debug your program.

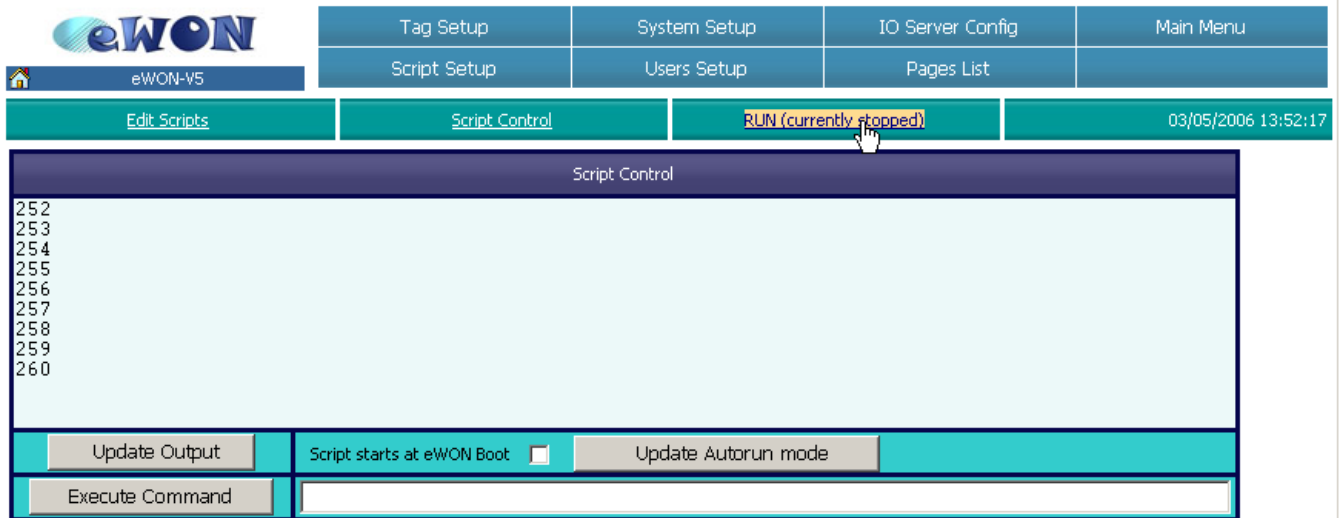


Figure 69: eWON script control page

To display the result of the script execution, 2 actions must be performed:

- Start the script execution by clicking on the **RUN** link.
- Click on the **Update Output** button to update the display of the result screen.

It's also possible to execute one-shot commands. Just fill in the blank field with the command to execute and then click on the **Execute Command** button.


Validate the **Script starts at eWON Boot** checkbox to start the script automatically when the eWON boots. This change will be validated after you have clicked on the **Update Autorun mode** button.

3.7.3 The RUN/STOP link

This link is used to start or stop the script execution.

3.8 Wizards

To help you quickly and easily configure some features, eWON provides you some wizards.

Use the  logo to display the available wizards on your eWON.

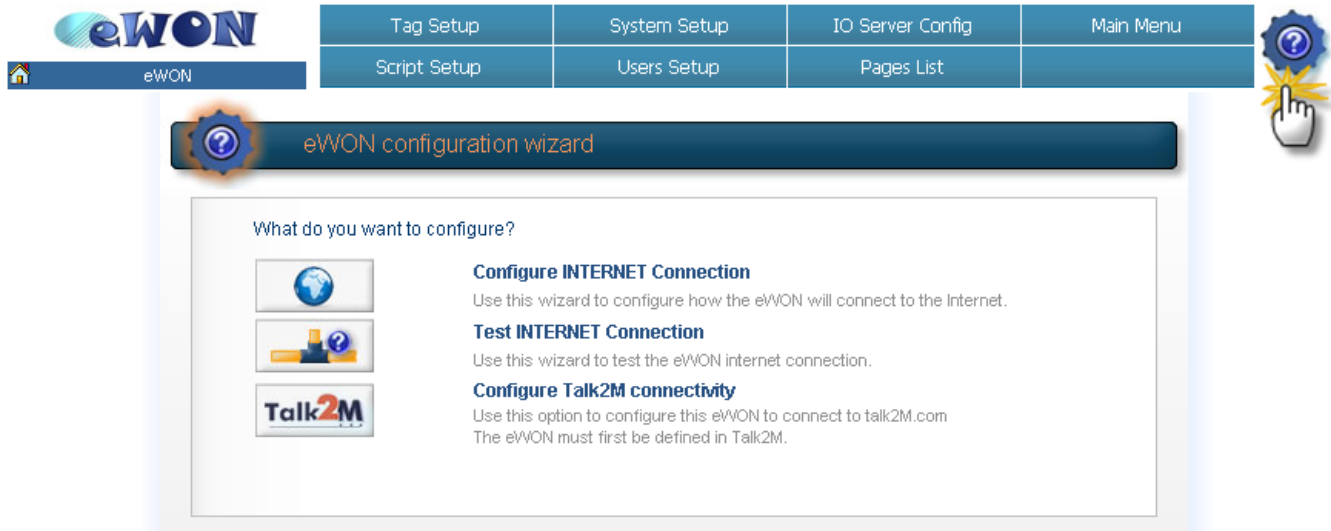


Figure 70: Wizards list




Wizard	Description
Configure INTERNET Connection 	Use this wizard to configure your eWON for Internet connection. You can choose between Modem or WAN, encode your PIN code, APN (for GPRS), choose if the connection will be permanent or OnDemand, ... <i>Only available for eWON with modem.</i>
Test INTERNET Connection 	Use this wizard to test your Internet connection. <i>Only available for eWON with modem.</i>
Configure Talk2M connectivity 	Use this wizard to add your eWON to your Talk2M account. <i>Only available for eWON with VPN.</i>

Table 54:

Depending on its type, the eWON will show you only the wizard corresponding to its hardware.

4 Configuring the eWON by a file upload

It is possible to configure the eWON by uploading some files with an FTP client program.

If you need to configure the eWON, you will put the `config.bin` file or the two `config.txt` and `comcfg.txt` files on the root directory of the eWON.

You could also put the `program.bas` directly on the eWON. You can edit/modify the script Basic application in your favorite text editor, save as text file with the name `program.bas` and upload it in the eWON.

The files `config.txt` and `comcfg.txt` are interpreted by eWON. The eWON will use only the parameters that are known by it. In addition, you can send a `config.txt` file containing only the parameters that you want to modify.

For instance, if the *Config.txt* file only contains the following lines, only the eWON identification will be changed.

```
:System
Identification:New_Identification
```

The *config.txt* file contains three sections: *System*, *TagList* and *UserList*. A section must only be declared if at least one field of that group is present in the file. A field must always appear after its section declaration.

A section is declared on a separated line, preceded by a colon (See example above).

Each user and Tag appears on a separated line, with its field separated by a semicolon.

Example: the following `config.txt` file updates the eWON identification, defines a first user named "user1", a second user named "user2", and a Tag named "tag1". Notice that for user1, the CBMode is not specified and takes the value 0 (Mandatory), while for user2, CBMode takes the value 1 (User Defined).

```
:System
Identification:eWON
Information:
:TagList
"Id";"Name";"Description";"ServerName";"Address";"tagvalue"
1;"tag1";"first Tag";"MEM";"tag1";"47"
:UserList
"Id";"FirstName";"LastName";"Login";"Password";"Information";"CBMode"
1;"Jacques";"Dupond";"user1";"thePassword";"first user";
2;"Albert";"Deux";"user2";"thePassword2";"second user";"1"
```

When creating a Tag or a user, any field that is not specified will take the default value. Be aware that when creating a user, the full rights are allowed on the Tags by default (v.o.a.c).

The fields found in the *config.txt* and *comcfg.txt* file can also be used with the **GETSYS** and **SETSYS** functions explained in "eWON Programming Manual".

A table describing all the fields can be found in "eWON Programming Manual".

5 The eWON IO Servers

5.1 Introduction

This introduction repeats some information already introduced in chapter “Tag definition: Introduction” on page 67.

An IO Server is the interface between a changing value and the eWON monitoring engine. It is a kind of driver. Any variable from any *data source* must have a common representation for all IO Servers in order to define common interface in the eWON.

The *data-source* representation in the eWON uses 3 fields for the definition of a Tag:

- The IO Server Name
- The Topic name
- The Item Name

A Tag's data-source will be uniquely identified with these 3 parameters:

IO Server name:	Is a kind of driver name. For each IO Server there is a specific Topic Name and Item Name syntax. Example: MODBUS, EWON, MEM
Topic Name:	Is used to group items inside an IO Server, for example the memory IO Server uses the blank topic ("") and the retentive topic ("ret"). All Tags of the MEM IO Server defined in the "ret" topic will have their value saved and restored when the eWON boots. All IO servers do not use a Topic Name. In that case the Topic Name field must be left empty.
Item Name:	The item name is a string of characters; its syntax is specific to each IO Server. The Item Name describes the physical variable to monitor that uses the IO Server.

For example, the MODBUS IO Server needs to poll registers or coils from a slave, so it uses an item name representation to define the *register type*, *register address* and *slave address*. (Example "40001,5" => Where 4 means "read write register", 0001 is the register number and 5 is the slave Modbus address).

Table 55: Tags data-source parameters

Important note: For optimisation purpose, the eWON may disable the polling of “invalid tags” (See “IO Server Init” on page 86).

5.2 IO servers setup

Some of the IO servers are configurable.

The IO setup window proposes a list of IO servers:



Figure 71: eWON IO servers scrolling list

Click on the **Edit** hyper link or select another IO server to display its edition window.

There are 3 possible cases regarding the IO server configuration:

- The IO server is not configurable
- The IO server has a dedicated configuration page (ex: MODBUS, UNITE, NETMPI, DF1, ...)
- The IO server uses the standard IO server configuration page.

5.2.1 IO Server Clear

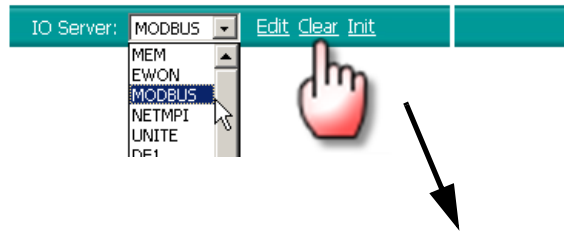
To avoid the useless consumption of CPU and memory, the unused IO Servers need to be “unloaded” from CPU tasks and the used memory need to be cleared.
For that purpose, the Clear function must be used.

Only set to *disable* the BaudRate of an IO Server make it idle, but this IO Server is still in memory and use some CPU time (for nothing).

Click on the **Clear** link to reset the config of the displayed IO Server and unload it from memory.

Some IO Servers are not dynamically stoppable and need an eWON reboot to ensure the unload from memory. You will be warned with the following message.

Config cleared (but IO server is not stoppable, reboot is required to disable IO server).

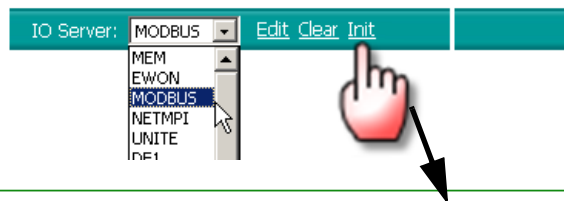


Config cleared and IO server stopped.

5.2.2 IO Server Init

Click on the **Init** link to initialise an IOServer.

This initialisation will reset all IOServer counters (See “Status” on page 159) and restart the tags validation process (See “Tags validation” on page 68).



IO Server counters reset and reinitialisation of tag polling done.

5.2.3 Global Config

IO Server: MODBUS Edit Clear Init Global Config 13/03/2008 16:52:54

IO Servers global configuration

eWON servers & gateway IP ports

Modbus TCP Port	502	These changes will only be effective after reboot
EtherNet/IP Port	44818	These changes will only be effective after reboot
ISOTCP Port	102	These changes will only be effective after reboot
FINS Port	9600	These changes will only be effective after reboot

Advanced Parameters

Disable Tags in Error	<input type="checkbox"/>
-----------------------	--------------------------

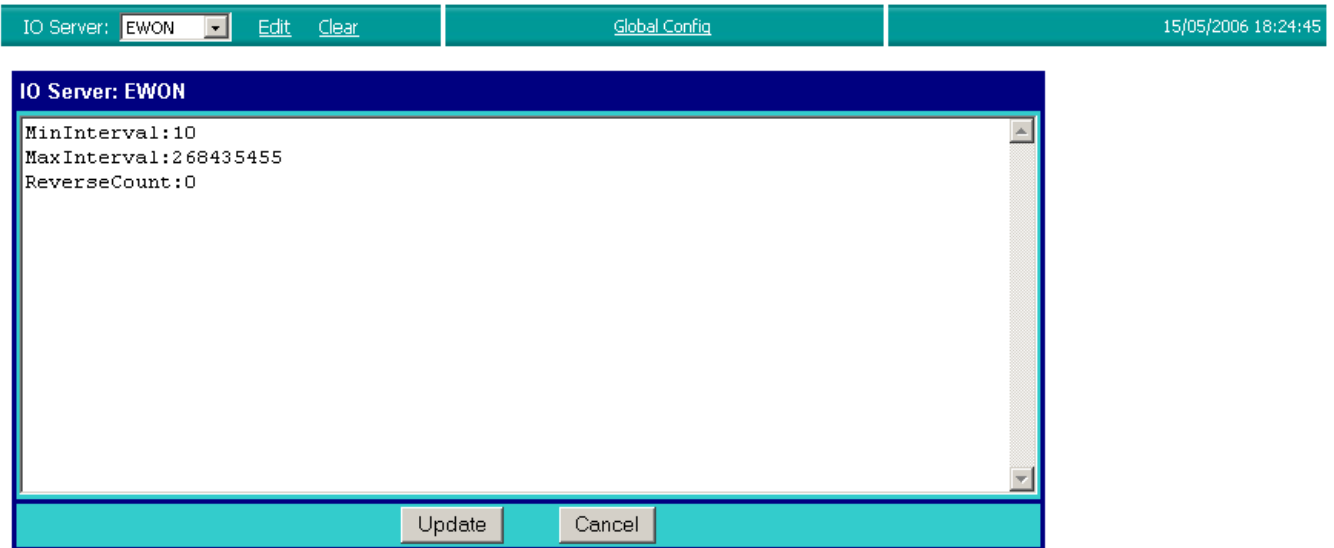
Update

Figure 72: IOServer Global Config page

Item	Description
Modbus TCP Port	Encode here the TCP Port number used for the ModbusTCP server protocol. <i>Default is 502</i>
Ethernet/IP Port	Encode here the TCP Port used for the Ethernet/IP protocol (Allen Bradley). <i>Default is 44818</i>
ISOTCP Port	Encode here the TCP Port number used for the ISOTCP protocol (Siemens). <i>Default is 102</i>
FINS Port	Encode here the TCP Port number used for the FINS protocol (Omron). <i>Default is 9600</i>
Disable Tags in Error	Activate the Tags Validation See “Tags validation” on page 68

5.2.4 Standard IO server configuration page

When no dedicated configuration page is defined for configuring an IO server, the standard configuration page is used.



The image shows a web-based configuration interface for an IO server. At the top, there is a header bar with a teal background. On the left, it says 'IO Server: EWON' with a dropdown arrow next to 'EWON'. To the right of this are two buttons: 'Edit' and 'Clear'. In the center of the header is a link labeled 'Global Config'. On the far right of the header is a timestamp: '15/05/2006 18:24:45'. Below the header is a main configuration area with a blue border. At the top of this area, it says 'IO Server: EWON'. Below this is a large text area with a white background and a vertical scrollbar on the right. Inside the text area, the following parameters are listed on separate lines: 'MinInterval:10', 'MaxInterval:268435455', and 'ReverseCount:0'. At the bottom of the configuration area are two buttons: 'Update' and 'Cancel'.

Figure 73: Standard IO server configuration page

As you can see in the above example, the standard configuration screen is a simple text edition area. Each parameter is entered on a separate line, the parameter value is separated from the parameter name by a colon ':'.

The generic format of a line is:

PARAM_NAME : PARAM_VALUE

Warning: Extra space must be removed.

When using this configuration, you must respect the correct syntax of each parameter and the values for each parameter.

The list of valid parameters and their corresponding valid values are listed in the corresponding IO server documentation (see following chapters).

Any error that would occur when the eWON applies the configuration that you have entered would be written to the event file. Please refer to chapter "Files transfer" on page 154 to see how to get access to the events file.

5.3 Modbus IO server

5.3.1 Introduction

The MODBUS IO Server setup is the standard remote IO communication setup of the eWON. It is used to configure:

- The eWON as a Modbus RTU master.
- The eWON as a Modbus TCP slave and master.

The first feature (Modbus TCP slave) is specific to the MODBUS IO server; it is actually designed to provide access to eWON Tag values and, unlike all the other IO servers, for interfacing field values with the eWON.

The second feature (MODBUS Master) is the actual IO server feature that provides an interface to the field values as a common IO server.

The eWON MODBUS IO server will give access to values in equipments having a MODBUS interface.

The interface can be:

- RS485 – MODBUS RTU protocol will be used
- ETHERNET/PPP – MODBUS TCP protocol will be used.

The eWON can mix access to MODBUS RTU and MODBUS TCP, depending on the way the Tag address is defined.

5.3.2 Setup

5.3.2.1 Setup for eWON Server

Figure 74: Modbus TCP Server configuration

This page defines the eWON configuration when used as a Modbus TCP slave.

As described in the Tag configuration paragraph, each Tag can be published to Modbus TCP so that a Modbus TCP can read their values.

This setup screen defines the eWON address, and globally enables or disables the Modbus TCP slave feature.

eWON Server Properties	Description
eWON server enabled	Globally enables or disables the Modbus TCP Server feature. If disabled, then any request from a Modbus TCP master will be rejected, even if Tags are published.
Modbus TCP Unit address	This feature is used by some gateway but can usually be left to 1 because Modbus TCP appears as a point to point connection.

Table 56: eWON server configuration - eWON as Modbus TCP slave

5.3.2.2 Setup for eWON IO server and Gateway - COM Setup

Figure 75: Modbus communications configuration

If more than one Serial port are available, you must choose on which COM the modbus request will be sent.

This configuration part defines the RS485 setup. The four first fields are used to define the baud rate, parity, number of stop bits and the reply timeout (in msec – usually 1000 msec).

Warning: When there are multiple IO servers using potentially the serial line, then the unused IO server must be Cleared or the baudrate must be set to Disabled.

Example: if Modbus and UniTE IO servers are available, at least one of them must have its baud rate set to Disabled. If not the case, one of the IO servers will not be able to use the serial line and it will be disabled, with an error written in the event log.

5.3.2.3 Topic configuration

Figure 76: Modbus topics configuration

Three topics can be used for the IO Server. These topics are used to give a common property to a group of MODBUS Tag like:

- **Enable/Disable**
- **Poll rate**
- **Slave address (Modbus RTU)**
- **Unit address and TCP/IP address (Modbus TCP)**

Modbus Server Properties	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Slave address	The slave address is a global parameter for all the Tags of the topic. If the slave is connected with Modbus RTU, Slave address must be entered and the IP address must be blank. If the slave is Modbus TCP, its unit address and its IP address must be entered.
Poll rate	This defines the rate to which the Tag will be refreshed. In a complex application, we can imagine that some Tags must be refreshed every second – typically for digital input - and other every minute – typically: temperature-.

Table 57: Modbus topic configuration

Warning:

Any slave address that is defined in the Topic configuration overwrites the slave address configured per Tag.

If a Tag is defined with Tag Address: 40010,5 and the global address of the topic is 5 and 10.0.0.81, the Tag is entered as Modbus RTU but it is polled as Modbus TCP. So, if you need to address slaves Tag by Tag, let the topic address configuration empty.

5.3.2.4 Advanced parameters

Figure 77: Modbus advanced parameters configuration

Extended parameters have been added to accommodate various special operating conditions. They are entered in the edit box at the bottom of the configuration page, conforming to the syntax below. Each parameter has a default value, so the advanced parameter edit box must only be filled with the parameters for which default values must be changed. (c.f. "Standard IO server configuration page" page 87).

Parameter name	Description
PreDelayFrom	Used in conjunction with the next parameter (PreDelayVal), starting at that slave address, the eWON will insert a delay when switching from one slave address to another. If the PreDelayVal feature is not used, then the value for PreDelayFrom must be set to 256 (default value).
PreDelayVal	Used to define the delay (in Msec) to be inserted before a request to a slave if a request was previously sent to another slave address (not between 2 requests to the same slave). The PreDelayVal is placed only for slaves with an address higher than PreDelayFrom.
ErrorRetry	Defines the number of errors before the device enters in slow poll mode. (Minimum 1)
SlowPollSkip	Defines the number of times the slave is skipped when in slow poll mode. This delay depends on the poll rate.
GatewayIPCTimeout	Maximum event lock while waiting for a response to a modbus gateway request from the modbus IO server (router) (in Msec – minimum 1000).
PostErrorDelay	This delay (in Msec) is added each time a device responds with a framing error or a CRC error, in order to help the bus to perform its re synchronization (default value = 50).
MaxDeltaCoilX (X= A,B,C)	Maximum number of Coils that can be grouped in a request (per topic) max=256
MaxDeltaRegX (X= A,B,C)	Maximum number of registers that can be grouped in a request (per topic) max=124

Table 58: extended IO server configuration controls

5.3.2.4.1 Additional advanced parameters

• gwdestaddr

When the eWON is used as a Modbus gateway, it uses the UnitID from the ModbusTCP request to determine the Modbus RTU destination address.

It is possible to bypass this mechanism and force all the requests received by the eWON in ModbusTCP to be forwarded to a single ModbusRTU device (EXCEPT for requests with UnitID corresponding to the eWON's Modbus TCP Unit address (usually 100) when the eWON Server is enabled - see explanations about this precise point in the above configuration fields descriptions).

Every request is forwarded to the device with Slave address defined by the Modbus IO server advanced parameter called **gwdestaddr**.

If the advanced parameters textfield contains the following entry:

gwdestaddr: 10

Then all therequests will be forwarded to the slave with address 10.

REMARK: the eWON will change the address before sending the request to the slave, then it will change it back when sending the response to the master (Modbus TCP master). So the **gwdestaddr** will never appear in any communication between the Master and the eWON.

• FastSrv

FastSrv is a mode which allows a supervisor to read in Modbus TCP more easily the Modbus tags published by the eWON. This mode completely changes the tag's addressing, and when activated, the Modbus addresses are no more compatible.

You have just to enter "FastSrv:1" in the Advanced Parameters text area to activate it. When done, the Modbus tags can be read as follows:

X	Integer (with scale factors and offset defined)
X+2048	Float (X+2048: 1 st float, X+2048+2: 2 nd float, etc.)
X+4096	Alarm status
X+6144	Alarm type

Notes:

- If the tag is binary read, its value is worth 0 if tag==0, and 1 if tag <>0
- Writing 0 in AlarmStatus acknowledges the alarm (will be logged by eWON as acknowledged by administrator)
- It is not possible to write a coil in the float area (coil address range: X+2048 to X+4094)
- It is not possible to address more than 1024 registers in float.

Click on the **Update Config** button to validate your inputs or use the **Cancel** button to discard changes

• TcpPort

Use the 'TcpPort' parameter to change the default 502 port used when the eWON is ModbusTCP CLIENT.

If not specified the 502 default value is used.

This Port value is used for all the ModbusTCP client connections.

5.3.3 Tag name convention

IO Server configuration		
IO Server Name	MODBUS	
Topic Name	A or B or C	
Item Name	ValueName,SlaveAddress	The PLC Address is defined Tag by Tag on serial link (RTU Master)
	ValueName,SlaveAddress,IPAddress	The PLC Address is defined Tag by Tag on TCP link
	ValueName	The Topic PLC address is used

5.3.3.1 ValueName

The Modbus IO Server Tags can be classified following ranges of values. Two types of ranges are used. The two following tables describe the different ranges of value, for each of the two standards.

• **First standard:**

Modbus Type	IO Type	Access	Register address
Coil	Digital Output	R/W	1 → 9999
Contact	Digital Input	R	10001 → 19999
Input Register	Analog Input	R	30001 → 39999
Holding Register	Analog Output	R/W	40001 → 49999
Output Coil*	Digital Output	W	50001 → 59999
Output Registers*	Analog Output	W	60001 → 69999

Table 59: Modbus IO server Tag name convention: first standard

• **Second standard:**

Modbus Type	IO Type	Access	Register address
Coil	Digital Output	R/W	+1 → +65535
Contact	Digital Input	R	+100001 → +165535
Input Register	Analog Input	R	+300001 → +365535
Holding Register	Analog Output	R/W	+400001 → +465535
Output Coil*	Digital Output	W	+500001 → +565535
Output Registers*	Analog Output	W	+600001 → +665535

Table 60: Modbus IO server Tag name convention: second standard

The second standard allows more than 9999 values in each range. Notice the "+" sign before the register value.

* The two last ranges are used with non-standard equipments that do not allow the reading of some of their values. In this case, specifying the address in the "write only" ranges informs the eWON not to read the values after setting them, which is normally done in the other cases. If those registers are read, the returned value will always be 0.

After the numerical value, the characters F, L, I, D or W can be used to specify how to read the value. The following table describes the different character meaning.

Character	Description
W	Reads 1 register considered as 16 bits unsigned integer (DEFAULT IF NOT SPECIFIED)
I	Reads 1 register considered as 16 bits signed integer
D	Reads 2 regs R1, R2 as a DWORD R1 is Less significant, R2 is most significant (32 bits, unsigned) (*)
E	Reads 2 regs R1, R2 as a DWORD R2 is Less significant, R1 is most significant (32 bits, unsigned) (*)
L	Reads 2 regs R1, R2 as a LONG R1 is Less significant, R2 is most significant (32 bits, signed) (*)
M	Reads 2 regs R1, R2 as a LONG R2 is Less significant, R1 is most significant (32 bits, signed) (*)
F	Reads 2 regs R1, R2 as a FLOAT R1 is Less significant, R2 is most significant (32 bits, signed)
H	Reads 2 regs R1, R2 as a FLOAT R2 is Less significant, R1 is most significant (32 bits, signed)

Table 61: the characters used to specify how to read the value

(*) Important: See “Tags are stored as Float” on page 67

When reading a 32 bits value, two consecutive registers or coils are read and combined e.g. 40001L,11 to access in Long representation the reg 1 on the slave 11.

Reading high 32 bits values involve a lost of precision in the mantissa because internally all the values are considered as float by the eWON.

examples :

address	meaning
40001,10	access the <i>Holding Register</i> at address 1 on the UnitID 10
1,11	access the <i>Coil</i> at address 1 on the UnitID 11
+320234,12	access the <i>Input Register</i> at address 20234 on the UnitID 12
40001,100,10.0.0.53	access the <i>Hoding Register</i> at address 1 on the UnitID 100 at IP address 10.0.0.53
40010L,12	access the LONG <i>Holding Register</i> at address 10 (and 11) on the UnitID 12
40008F,15	access the FLOAT <i>Holding Register</i> at address 8 (and 9) on the UnitID 15

Table 62: Modbus address examples

STATUS TAG:

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ItemName is composed of:

Status,Address

If the address is omitted, the Topic address will be used e.g. status,11 points to the status of the slave 11

You can define a status Tag for each address used.

If you use the status MODBUS address, the Tag must be configured as analog:

Tag value	Meaning
0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 63: MODBUS status values

5.3.3.2 Slave Address

This is the address of the slave device that you want to access.
It is a number from 0 to 255.

Example:

30001,11	Polls a RTU device at address 11.
-----------------	-----------------------------------

5.3.3.3 IP Address

This is the IP address of the device on an Ethernet network. It is composed of 4 numbers separated by a dot.

Example:

30001,11,10.0.0.50	Polls a device configured with IP address 10.0.0.50 and with Modbus slave address 11.
---------------------------	---

5.3.3.4 Device specific information

Warning for new users of WAGO modules:

Keep in mind that coil read and write don't use the same address (offset of 0x200); please consult the Wago™ documentation.

Example:

If you use Wago™ systems with two digital inputs and two digital outputs, inputs have addresses 1 and 2, and outputs have the same. The only way to distinguish them it's the read-only access or R/W access.

Tags: station 11

Tag	Modbus address	Comment
MB_DigIn1	10001,11	Digital input module 1 -- read-only
MB_DigIn2	10002,11	Digital input module 2 -- read-only
MB_DigOut1	00001,11	Digital output module 1 for writing - Encode all leading zeroes!
MB_DigOut1Read	10513,11	Digital output module 1 for reading only
MB_DigOut2	00002,11	Digital output module 2 for writing Encode all leading zeroes!
MB_DigOut2Read	10514,11	Digital output module 2 for reading only

Table 64: Wago™ modules - addresses examples

In *View I/O page*, you can change the value of MB_DigOut1 with the update link (set to 1), and if you do that, you view that the value read is always 0.

Why?

Because the eWON reads the value at the WAGO address 1 (thus, DigIn1)! If you want to read the state of the DigOut1, you must read it at WAGO address 513!

The same remark is applied for analog Modbus registers. It's the documented behavior of Wago™-Modbus modules; keep it in mind.

5.4 NETMPI IO Server

5.4.1 Introduction

NETMPI IO server is used to communicate with SIEMENS PLC. The eWON will connect to the PLC's MPI interface by means of the eLINK adapter.

The eLINK adapter is an interface with an MPI interface on one side and an Ethernet TCP/IP interface on the other side.

The eLINK interface will be configured with an IP that the eWON will use to poll data. In addition to the IP address, the eWON will need the MPI address of the PLC on the MPI bus.

Using that eLINK interface, it is possible to poll different types of item in the PLC. These items types are described below.

5.4.2 Setup

Figure 78: NETMPI configuration window

As for the Modbus and Unite protocols, it is possible to define topics, so that a single configuration can be applied to several Tags.

5.4.3 Tag name convention

IO Server configuration		
IO Server Name	NETMPI	
Topic Name	A	
	B	
	C	
Item Name	ValueName,RemoteStationAddress,eLinkIpAddress	PLC Address is defined Tag by Tag
	ValueName	Topic PLC Address is used

Table 65: NETMPI - IO server configuration

The Item Name can contain the PLC address where the value is polled, or not. If address is also specified at topic level, the address specified at Tag level will be ignored.

5.4.3.1 ValueName

DBxBy	Data block x Byte offset y (0-255)
DBxWy	Data block x Word offset y (0 - 65535)
DBxFy	Data block x Float offset y (+-3.4e38)
DBxDy	Data block x DWord offset y (-2147483648->2147483647) (*)
MxB	Memento x as byte
MxW	Memento x as word
MxF	Memento x as real
MxD	Memento x as double (*)
Tx	Timer x (0-65535)
Cx	Counter x (0-65535)

Table 66: value names for NETMPI addresses

(*) Important: See "Tags are stored as Float" on page 67

• **Bit access modifier:**

In any of the above items, it is possible to access a single bit (except for float items).

#x must be appended to the Value Name. (Bit index goes from 0..31)

The syntax can be used for reading bits and for writing them as well.

Example:

DB1W13#3 represents bit 3 of W13 in DB 1

REM:

Bit index range depends on a referenced item (for W, bit index maximum value is 15)

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 67: Tag Status meaning

5.4.3.2 Device Address

The device address is either appended to the ValueName in the Item Name definition, or entered in the Topic global address fields.

The device address is composed of: RemoteStationAddress,eLinkIpAddress:

- **RemoteStationAddress:** is the PLC's MPI address
- **eLinkIpAddress:** is the eLINK IP address.

Important:

If the PLC address is defined at the Topic level, it can be omitted in the Tag definition. In that case the Tag name will only contain the "ValueName".

If the PLC address is specified at the Topic level, it will replace any address defined Tag by Tag.

5.5 UNITE IO Server

5.5.1 Introduction

The eWON RS485 link can be configured as an UNITEWAY SLAVE INTERFACE. When the BaudRate in the UNITE IO Server is set to a value different than "Disabled", the Unitelway slave module in the eWON will be enabled.

This Unitelway slave provides 2 features:

- **Poll items in a Unitelway capable device.**

The device can be the Unitelway master itself or a device addressable through the Unitelway master on the XWay network.

- **Forward XIP requests from TCP/IP XIP to Unitelway bus and thus, act as a gateway between XIP and Unitelway.**

Using that feature, it is possible to access a PLC connected to the eWON's Unitelway link by connecting PL7PRO using the XIP driver started with the eWON IP address as destination.

5.5.2 Setup

5.5.2.1 Communication Setup

IO Server: UNITE	Edit	Clear	Global Config	14/05/2006 22:37:50
XWay - Unitelway IO Server & Gateway settings (eWON is acting as a XIP to Unitelway gateway and Unitelway IO slave)				
COM Setup				
COM Port:	SER1 Port (COM:1)			
Baud Rate:	19200	Default: 9600		
Parity:	Odd	Default: ODD		
Stop Bit(s):	1	Default: 1		
HW Mode:	Half Duplex	Default: Half duplex		
Master response timeout:		MS	20..60000, default: 1000	
Rx message timeout:		MS	1000..60000, default: 3000	
Tx message timeout:		MS	1000..60000, default: 3000	
Force Unitelway V2	<input type="checkbox"/>		If not checked eWON will talk in V1	
Disable 0,254 translation	<input type="checkbox"/>		If not checked, the gateway uses the request's Network & Station destination address	
AD0	4	Link address of eWON on unitelway bus (default: 4)		
XWAY Network.Station	13	14	(0..127).(0..63)	

Figure 79: XWAY-UNITELWAY configuration

If more than one Serial port are available, you must choose on which COM the Unitelway request will be sent.

Baud Rate	Select the baud rate applying to your industrial network
Parity	The parity to apply: none / odd / even. This field is set by default to Odd, as in the main cases in a typical UniTE topology. However, the eWON allows you to define a different parity type (Even or None), in case this is useful to comply with your industrial network installations.
Stop Bit(s)	Number of stop bits
Master Response Timeout	Maximum time the eWON will wait for a valid message from the Unitelway master. This value can be critical for a correct operation, depending on the responsiveness of the master. A value of 1000 should be selected to guarantee a correct operation.
Rx message timeout (MSEC)	Maximum time between a request is posted and the response is received
Tx message timeout (MSEC)	Maximum time for a request to be sent
Force UnitelWay V2	If checked, the eWON will initiate a communication in V2 with the devices. When used with a TSX PLC, this check box can be left unchecked.
ADO	Link address base. The eWON will respond to AD0 and AD0+1 on the Unitelway link. The eWON will act as an Unitelway slave, it will respond to 2 consecutive link addresses AD0 and AD0+1, doing this improves the throughput of data across the eWON when acting as a gateway.
Xway Network Station	Address of the eWON on the XWAY network. When acting as an XIP to Unitelway gateway, the eWON will only respond the XWay network station defined here. Any XIP frame addressed to another network station will be ignored.

Table 68: XWAY communication setup controls

Important: When there are multiple IO servers potentially using the serial line, the unused IO servers must be "DISABLED" for the unused IO server baudrate.

Example: if Modbus and UniTE IO servers are available, at least one of them must have the baudrate configured to "Disabled". If not, one of the IO servers will not be able to use the serial line and it will be disabled, with an error written in the event log.

5.5.2.2 Topic configuration

The screenshot shows a configuration window for XWAY-UNITELWAY topics. It contains three sections for Topic A, Topic B, and Topic C. Each section has a header bar with a checkbox for 'Enabled'. Topic A is enabled, while Topic B and Topic C are disabled. Below each header are three rows: 'Topic Name', 'Global Slave Address', and 'Poll Rate'. The 'Global Slave Address' field has a hint: '(Network, Station, Gate[, Module, Channel]) 0,254,0 is default'. The 'Poll Rate' field has a hint: 'Default: 2000'. At the bottom, there are 'Update Config' and 'Cancel' buttons.

Figure 80: XWAY-UNITELWAY topics configuration

Three topics can be used for the IO Server. These topics are used to give a common property to a group of UNITE Tags such as:

- **Enable/Disable**
- **Poll rate**
- **Global Slave address**

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Slave Address	This Slave address is a global parameter for all the Tags of the topic. See below for the Device Address syntax. If an address is specified here, it will replace (overload) the address defined Tag by Tag.
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag name must be refreshed every second – typically for digital input - and other every minute – typically: temperature-.

Table 69: UNITE - topics configuration

5.5.3 Tag name convention

IO Server configuration		
IO Server Name	UNITE	
Topic Name	A	
	B	
	C	
Item Name	ValueName,Network,Station,Gate,Module,Channel	PLC Address is defined Tag by Tag (and the gate requires a 5 level addressing)
	ValueName,Network,Station,Gate	PLC Address is defined Tag by Tag
	ValueName	Topic PLC Address is used

Table 70: UNITE - IO server configuration

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at topic level, the address specified at Tag level will be ignored. If the Topic address is not defined either, then address 0,254,0 will be used.

5.5.3.1 Value Name

Value name follows the syntax below:

MWxW	Internal data word 16 bits (unsigned)
MWxI	Internal data word 16 bits (signed)
MWxD	Internal data word 32 bits as DWORD (unsigned) (*)
MWxF	Internal data word 32 bits as IEEE float
MWxL	Internal data word 32 bits as LONG (signed) (*)
SWxW	System data word 16 bits (unsigned)
SWxI	System data word 16 bits (signed)
SWxD	System data word 32 bits as DWORD (unsigned) (*)
SWxL	System data word 32 bits as LONG (signed) (*)
Mx	Internal data bit
Sx	System data bit

Table 71: value names for UNITE addresses

(*) Important: See “Tags are stored as Float” on page 67

Notes:

SW type cannot be formatted as float

The eWON allows you to optimize the requests in case you need to read a lot of Tags that have been created on the UniTelWay device. Imagine you have 100 Tags to read, the eWON will group the Tags within a predefined limit in order to make the less as reading operations as possible. The number of Tags that can be read depends of the types of words or bits that have to be read:

SW and MW types: by groups of 50

S and M types: by groups of 200

It is possible to read one bit from a word. The syntax to add is as follows:

#0 to #31

That means that if you want to read the fourth bit from an internal data word 16 bits unsigned that you address MW0, you have to add "#4" at the end of the address: MW0#4.

The type of words for which this syntax can be applied are:

MWxW, MWxI, MWxD, MWxL, SWxW, SWxI, SWxD and SWxL (please report to the table above).

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 72: Tag Status meaning

5.5.3.2 *The device address syntax*

The Device Address is used in the topic definition or in the Tag definition. If used in the Tag definition, it will be separated from the value name by a coma (',')

- **Network,Station,Gate**

or

- **Network,Station,Gate,Module,Channel**

The second case applies to addresses with 5 levels:

- **Network: 0..127**

- **Station: 0..63**

- **Gate:**

- **Module:**

- **Channel:**

Module and channel can be omitted if not required.

If the address is not specified, 0,254,0 will be used.

Important: If an address is specified in a Topic definition it will replace any address defined Tag by Tag.

5.6 DF1 IO Server

5.6.1 Introduction

The eWON serial link can be configured as a DF1 INTERFACE. When the Baud Rate in the DF1 IO Server is set to a value different than "Disabled", the DF1 module in the eWON will be enabled.

This DF1 module provides 3 features:

- Poll items in SLC50x and PLC5 controllers using PCCC requests.
- Forward PCCC requests from EIP (TCP/IP) to DF1 bus and thus, acts as an adapter between EIP and DF1.

Thanks to that feature, it is possible to access a PLC connected to the eWON's DF1 link by connecting RSLogix 500 using RSLinx TCP driver started with the eWON IP address as destination.

- Poll DH+ device using ControlLogix gateway

The DF1 IO Server must be configured in **Full Duplex mode** (eWON serial link must be configured in RS232 mode, with dipswitch).

note: Please check in the "Rockwell compatibility matrix" on page 204 if your device is supported.

5.6.2 Setup

5.6.2.1 Communication Setup

IO Server: DF1 Edit Clear Init		Global Config	30/09/2008 14:53
DF1 IO Server & Gateway settings (eWON is acting as a EIP to DF1 adapter and DF1 IO slave)			
COM Setup			
Baud Rate:	<input type="text" value="9600"/>	Default: 9600	
Parity:	<input type="text" value="None"/>	Default: NO	
Stop Bit(s):	<input type="text" value="1"/>	Default: 1	
Frame Error Detection:	<input type="text" value="CRC"/>	Default: CRC	
HW Mode:	<input type="text" value="Full Duplex NO Handshaking"/>	Default: Full Duplex	
Master response timeout:	<input type="text" value="20000"/> MS	20..60000, default: 1000	
Rx message timeout:	<input type="text" value="3000"/> MS	1000..60000, default: 3000	
Tx message timeout:	<input type="text" value="3000"/> MS	1000..60000, default: 3000	
eWON DF1 Address	<input type="text" value="4"/>	Device address of eWON on DF1 link (0..254, default: 4)	
Destination DF1 Address	<input type="text" value="1"/>	Device address of destination on DF1 link when EIP is used (0..254, default: 1)	
Bridge EIP Connection	<input checked="" type="checkbox"/> Enabled	Forwarding of EIP open connection requests is mandatory for LOGIX PLCs	

Figure 81: DF1 communications setup

If more than one Serial port are available, you must choose which COM the DF1 request will be sent to.

The following parameters can be modified:

Baud Rate	Select the Baudrate from 1200 to 38400 Bauds
Parity	The parity to apply: none / odd / even
Stop Bit(s)	Number of stop bits
Frame Error Detection	Cyclic Redundancy Check (CRC) or Block Check Character (BCC)
HW mode	Full Duplex no handshaking or Half duplex
Master Response Timeout	Maximum time the eWON will wait for a valid message from the DF1 master. This value can be critical for a correct operation, depending on the responsiveness of the master. A value of 1000 should be selected to guarantee correct operations
Rx message timeout (MSEC)	Maximum time between a request is posted and the response is received
Tx message timeout (MSEC)	Maximum time for a request to be sent

Table 73: DF1 communication setup controls

eWON DF1 address	The eWON's device address on the DF1 link When the eWON acts as a DF1 slave, it will respond to 2 consecutive link addresses; doing this improves the throughput of data across the eWON when acting as a gateway. (eWON DF1 address and eWON DF1 address +1)
Destination DF1 address	Device Address of Destination on DF1 link when EIP is used
Bridge EIP connection	When bridging is configured, EIP connections requests are forwarded to the PLC on the DF1 interface (mandatory for Logix family). This is the default configuration. When not configured, connection requests are cancelled by the eWON (must be disabled for SLC family).

Table 73: DF1 communication setup controls

5.6.2.2 Topic configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Destination Device Type and Address:	SLC500-1	SLC500-Device Address (0..254)
Poll Rate	2000 MS	Default: 2000
Topic B :		<input type="checkbox"/> Enabled
Topic Name:	B	
Destination Device Type and Address:		SLC500-Device Address (0..254)
Poll Rate		Default: 2000
Topic C :		<input type="checkbox"/> Enabled
Topic Name:	C	
Destination Device Type and Address:		SLC500-Device Address (0..254)
Poll Rate		Default: 2000

Figure 82: DF1 topics configuration

Three topics can be used for the IO Server. These topics are used to give a common property to a group of DF1 Tags like:

- **Enable/Disable**
- **Poll rate**
- **Destination Device Type and Address**

Topic configuration item	Description
Topic enabled	Enables or disables the polling of all the Tags in the topic
Destination Device Type and Address	The Destination Device Type and Address is a global parameter for all the Tags of the topic. See below for the Device Address syntax. If an address is specified here, it will replace (overload) the address defined Tag by Tag
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag name must be refreshed every second – typically for digital input - and other every minute – typically: temperature-

Table 74: DF1 topics configuration setup

5.6.2.2.1 DF1 : serial link

The Destination Device Type and address is :

- **SLC500-x** (where x is the address of your SLC500 Device, range 0..254)
- **PLC5-x** (where x is the address of your PLC5 Device, range 0..254)

i.e.: **Topic A Destination = SLC500-1**

Topic B Destination = PLC5-6

5.6.2.2.2 DF1 : Ethernet routing

Thanks to the ABLogix IO Server, the eWON is now able to poll data on SLC500/PLC5 devices by its Ethernet link. Even SLC500 connected behind your ControlLogix Network becomes available for polling.

With this use of DF1 IO Server, the Serial config can be left unconfigured (baudrate=disabled), only one Topic enabled is required.

You need to use a similar syntax than in ABLogix IO Server.

[DeviceType-] IP Address [, Port, Link]

- **DeviceType** = type of PLC (SLC500 or PLC5)
- **IP Address** = address on your Ethernet network (i.e.: 10.0.0.50)
- **Port** = value from 1 to 3 representing: 1 = Backplane, 2 = Channel A, 3 = Channel B
- **Link** could be:
 - **Slot**: representing the Slot on the Backplane (0=CPU)
 - **Node ID**: value from 0 to 99 (for ControlNet)
 - **IP address**

To reach a SLC500 with Ethernet address 10.0.0.60:

Topic A Destination = **10.0.0.60 or SLC500-10.0.0.60**

To reach a PLC5 with Ethernet address 10.0.0.65:

Topic A Destination = **PLC5-10.0.0.65**

To reach a SLC500 connected behind a ControlLogix :

Topic A Destination = **10.0.0.80,1,3,2,45 or SLC500-10.0.0.80,1,3,2,45**

- **10.0.0.80** = IP address of the ControlLogix
- **1** = BackPlane
- **3** = Slot 3 (COM card in ControlNet)
- **2** = Channel A (of the Card present in Slot 3)
- **45** = NodeID of the SLC500 (in the ControlNet network)

To reach a PLC5 connected behind a ControlLogix :

Topic A Destination = **PLC5-10.0.0.90,1,3,2,44**

- **10.0.0.90** = IP address of the ControlLogix
- **1** = BackPlane
- **3** = Slot 3 (COM card)
- **2** = Channel A (of the Card present in Slot 3)
- **44** = NodeID of the PLC5 (in the COM network)

5.6.2.2.3 DH+ polling using ControlLogix gateway

This feature allows the eWON to poll PLC Tags located on a DH+ network, behind a controllogix equipped with one or more DHRIO cards.

Polling is done using eWON EIP protocol.

The DF1 IO server is used to access the "SLC500" PLC family. The ABLOGIX IO server is used to access the "LOGIX" PLC family.

The syntax **[Device Type-] IP address [,Port,Link]** is still applicable but in this particular case:

the [,Port,Link] part becomes mandatory

The DH+ channel used to reached the "SLC500" PLC must be specified using the "A" or "B" character.

Example: To reach a SLC500 with DH+ node Id 5, using channel A of a DHRIO card at slot 9 of a controllogix at IP address 10.0.30.21.

Topic A Destination = **SLC500-10.0.30.21,1,9,A,5**

- **10.0.30.21** = IP address of the ControlLogix
- **1** = BackPlane
- **9** = Slot 9 (COM card)
- **A** = Channel A (of the Card present in Slot 9)
- **5** = NodeID of the SLC500 (in the COM network)

5.6.3 Tag name convention

IO Server configuration	
IO Server Name	DF1

Table 75: DF1 IO server configuration

Topic Name	A	
	B	
	C	
Item Name	ValueName, DeviceType-DeviceAddress	Device Type and Address are defined Tag by Tag Only device Type SLC500 is supported Device Address is a number between 0..254
	ValueName	Topic PLC Address is used

Table 75: DF1 IO server configuration

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at the topic level, the address specified at Tag level will be ignored.

5.6.3.1 Value Name

5.6.3.1.1 General Description

The general format of value names for data from SLC-500 controllers matches the naming convention used by the programming software. The format is shown below (The parts of the name shown between square brackets are optional).

General Value Name Format: X: [file] element [.field] [/bit]

X: Identifies the file type. The below table summarizes the valid file types, default file number for each type and the fields allowed.

X	File Type	Default file Number	Fields
O	Output	0	
I	Input	1	
S	Status	2	
B	Binary	3	
T	Timer	4	.PRE, .ACC, .EN, .TT, .DN
C	Counter	5	.PRE, .ACC, .CU, .CD, .DN, .OV, .UN, .UA
R	Control	6	.LEN, .POS, .EN, .DN, .ER, .UL, .IN, .FD
N	Integer	7	
F	Floating	8	
A	ASCII	none	

Table 76: value names for DF1 addresses

- **File:** File number must be 0-255 decimal
- **Element:** Element number within the file
- **Field:** Valid only for Counter, Timer and Control files
- **/bit:** Valid for all types except Floating

5.6.3.1.2 Output File Items

Output File Item Format: O[n]:e.s[/b]

- "n" represents the file number and is optional. Value is always zero
- "e" indicates the element number in the file (0..30)
- "s" indicates the sub-element number (0..255)
- "b" specifies the bit (0..15) decimal

5.6.3.1.3 Input File Items

Input File Item Format: I[n]:e.s[/b]

- "n" represents the file number and is optional. Value is always one
- "e" indicates the element number in the file (0..30)
- "s" indicates the sub-element number (0..255)
- "b" specifies the bit (0..15) decimal

5.6.3.1.4 Status File Items

Status File Item Format: S[n]:e[/b]

- "n" represents the file number and is optional. If not specified, it is assumed to be 2
- "e" indicates the element number in the file (0..255)
- "b" specifies the bit (0..15) decimal

5.6.3.1.5 Binary File Items

Binary File Item Format: B[n]:e/b

- "n" represents the file number and is optional. If not specified, it is assumed to be 3, otherwise must be between 3 and 255 decimal
- "e" indicates the element number in the file (0..255)
- "b" specifies the bit (0..15) decimal

Note:

The format B[n]/b is not supported.

5.6.3.1.6 Timer File Items

Timer File Item Format: T[n]: e [.f] [/b]

- "n" represents the file number and is optional. If not specified, it is assumed to be 4, otherwise must be between 4 and 255 decimal
- "e" indicates the element number (3 words per element) in the file (0..255)
- "f" identifies one of the valid values for timer fields specified in the table above. If omitted it is assumed to be the word containing the status bits
- "b" specifies the bit (0..15) decimal

5.6.3.1.7 Counter File Items

Counter File Item Format: C[n]: e [.f] [/b]

- "n" represents the file number and is optional. If not specified, it is assumed to be 5, otherwise must be between 5 and 255 decimal
- "e" indicates the element number (3 words per element) in the file (0..255)
- "f" identifies one of the valid values for counter fields specified in the table above. If omitted it is assumed to be the word containing the status bits
- "b" specifies the bit (0..15) decimal

5.6.3.1.8 Control File Items

Counter File Item Format: C[n]: e [.f] [/b]

- "n" represents the file number and is optional. If not specified, it is assumed to be 6, otherwise must be between 6 and 255 decimal
- "e" indicates the element number (3 words per element) in the file (0..255)
- "f" identifies one of the valid values for counter fields specified in the table above. If omitted it is assumed to be the word containing the status bits
- "b" specifies the bit (0..15) decimal

5.6.3.1.9 Integer File Items

Integer File Item Format: N[n]:e[/b]

- "n" represents the file number and is optional. If not specified, it is assumed to be 7, otherwise must be between 7 and 255 decimal
- "e" indicates the element number in the file (0..255)
- "b" specifies the bit (0..15) decimal

5.6.3.1.10 Floating File Items

Floating File Item Format: F[n]:e

- "n" represents the file number and is optional. If not specified, it is assumed to be 8, otherwise must be between 8 and 255 decimal
- "e" indicates the element number in the file (0..255)

5.6.3.1.11 ASCII File Items

ASCII File Item Format: An:e[/b]

- "n" represents the file number and is not optional
- "e" indicates the element number in the file (0..255)
- "b" specifies the bit (0..15) decimal

5.6.3.1.12 Status register

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 77: Tag Status meaning**5.6.3.2 Destination Device Type and Address**

The Device Address is used in the topic definition or in the Tag definition. If used in the Tag definition, it will be separated from the value name by a coma (',').

• Format:**DeviceType-DeviceAddress**

Only device Types SLC500 or PLC5 are supported.

Device Address is a number between 0 and 254.

example : SLC500-1 or PLC5-22

• Format:**[DeviceType-] IP address [,Port,Link]**

example: 10.0.0.80 to access a SLC500

See "DF1 : Ethernet routing" on page 101

5.7 FINS IO Server

5.7.1 Introduction

The FINS IO Server includes the configuration of:

- The eWON as a FINS Hostlink client (master) to give access on values in CSCJ series OMRON equipments reachable using eWON serial port(s).
- The eWON as a FINS TCP/UDP client (master) to give access on values in CSCJ OMRON equipments reachable using eWON Ethernet interface.
- The eWON as a FINS TCP/UDP server acting as a gateway between the Ethernet/PPP interface and the serial interface (used to connect remotely programming/monitoring software to OMRON FINS supporting equipments reachable using eWON serial ports).

The FINS IO Server is designed to provide simultaneous access to OMRON equipments on its serial interface and Ethernet interface. The correct protocol will depend on the topic that the Tag belongs to. UDP and TCP protocols can be mixed as well on the Ethernet interface.

When the BaudRate in the FINS IO Server is set to a value different than "Disabled", the serial Hostlink Client will be enabled.

The FINS IO Server can be configured in 3 modes:

- Full Duplex mode (eWON serial link must be configured in RS232 mode) without HW handshaking
- Full Duplex mode with HW handshaking
- Half Duplex slave mode (RS485 mode)

5.7.2 Setup

5.7.2.1 Communication Setup

COM Setup		
COM Port:	SER1 Port (COM:1)	
Baud Rate:	Disabled	Default: 9600
Parity:	Even	Default: EVEN
Databits:	7	Default: 7
Stop Bit(s):	2	Default: 2
HW Mode:	Full Duplex NO Handshaking	Default: Full duplex no Handshaking
Reply Timeout:	MS	50..50000, default: 3000
Ethernet FINS network:		0..127, default: 0
Ethernet FINS node:		0..254, default: 0
Serial FINS network:		0..127, default: 0
Serial FINS node:		0..254, default: 0

Figure 83: FINS IO server COM setup

The following parameters can be modified:

Baud Rate	Disabled, 1200, 2400, 4800, 9600, 19200, 38400, 57600
Parity	None, Odd, Even
Data Bits	7, 8
Stop Bit(s)	1,2
HW mode	Full Duplex no HW handshaking, Full Duplex HW handshaking, Half Duplex
ReplyTimeout	The maximum time the eWON will wait for a valid FINS message response (applicable for ethernet and serial interface).
Ethernet FINS network	Source Network Address (SNA) filled in a FINS request message originating from the eWON and sent out on the ethernet interface.
Ethernet FINS node	Source Node Address (SA1) filled in a FINS request message originating from the eWON and sent out on the ethernet interface. It uniquely identifies the eWON on the ethernet network.

Table 78: FINS IO server COM setup configuration fields

Serial FINS network	Source Network Address (SNA) filled in a FINS request message originating from the eWON and sent out on the serial interface.
Serial FINS node	Source Node Address (SA1) filled in a FINS request message originating from the eWON and sent out on the serial interface. It uniquely identifies the eWON on the serial network.

Table 78: FINS IO server COM setup configuration fields

5.7.2.2 Topic Configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Protocol:	Fins Serial	Default: SERIAL
Global Device Address:		Fins Network, Fins Node, HostLink or Ip
Poll Rate		Default: 2000
Topic B :		<input checked="" type="checkbox"/> Enabled
Topic Name:	B	
Protocol:	Fins Serial	Default: SERIAL
Global Device Address:		Fins Network, Fins Node, HostLink or Ip
Poll Rate		Default: 2000
Topic C :		<input checked="" type="checkbox"/> Enabled
Topic Name:	C	
Protocol:	Fins Serial	Default: SERIAL
Global Device Address:		Fins Network, Fins Node, HostLink or Ip
Poll Rate		Default: 2000

Figure 84: FINS IO server topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of FINS Tags like:

- Enable/Disable
- Protocol
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables the polling of all the Tags in the topic.
Protocol	Protocol used for the tags belonging to this topic: FINS Serial, FINS UDP, FINS TCP.
Global Device Address	See below for the Device Address Syntax. If an address is specified here, it will replace (overload) the address-defined Tag by Tag.
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

Table 79: FINS IO server topic configuration fields

5.7.2.3 Gateway Configuration

The following parameters can be modified:

IO Server: FINS Edit Clear	Global Config	14/05/2006 22:37:50
FINS IO Server & Gateway settings		
Gateway Configuration		
FINS TCP server node:	<input type="text"/>	0..254,default: 1
Routing Entry	FINS Destination Network: <input type="text"/>	Relay Node: <input type="text"/> (0..127, 0..254)
Routing Entry	FINS Destination Network: <input type="text"/>	Relay Node: <input type="text"/> (0..127, 0..254)
Routing Entry	FINS Destination Network: <input type="text"/>	Relay Node: <input type="text"/> (0..127, 0..254)
Routing Entry	FINS Destination Network: <input type="text"/>	Relay Node: <input type="text"/> (0..127, 0..254)

Figure 85: FINS IO server gateway configuration

FINS TCP Server Node	The eWON FINS server node address used during FINS TCP session establishment (exchange of the FINS node address messages, and allocation of a FINS TCP Client node if necessary).
Routing Entry 1..4	For each defined destination network, gives the matching relay destination node. This is used to fill in the host link unit ID in the hostlink frame which encapsulates the FINS message sent out on the serial interface.

Table 80: FINS IO server gateway configuration fields

5.7.3 Tag Name Convention

IO Server configuration		
IO Server Name	FINS	
Topic Name	A	
	B	
	C	
Item Name	ValueName, FINS Network, FINS Node, Hostlink or Ip Address	If FINS Serial has been chosen at topic level, Hostlink value has to be defined. If FINS UDP or FINS TCP has been chosen at topic level, IP address has to be defined.
	ValueName	Topic PLC Address is used.

Table 81: FINS IO server - Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If address is also specified at the topic level, the address specified at the Tag level will be ignored.

5.7.3.1 Value Name

5.7.3.1.1 General Description

The format of value names for data from CS/CJ OMRON controllers is shown below. Its is based on the naming convention used by the CX Programmer programming software. The format is shown below (The parts of the name shown in square brackets are optional).

General Value Name Format: X[bank number:][modifier]word address[#bit address]*

- X identifies the Memory area acronym.
- [bank number:] is only supported by the E memory area. Values 0 to max values for memory area.
- [modifier] allow you to interpret the data in a specific type (Word if omitted).
- [#bit address] is only supported by A, D, CIO, H and W memory areas. Values 0 to 15.

*items between brackets "[]" are optional (the brackets should not be used!)

Supported memory areas:

X	Memory area
A	Auxiliary area
C	Counter area
CIO	Core I/O area
D	Data Memory area
E	Extended Data Memory area
H	Holding area
T	Timer Area
W	Work Area

Table 82: FINS IO server supported memory areas table

Modifier:

Symbol	Modifier	value range
W	Word	0 .. 65535
S	signed Word	-32768 .. 32767
D	DWord	0 .. 4294967296 (*)
L	signed DWord	-2147483648 .. 2147483647 (*)
F	Float	+/- 3.4e38

Table 83: FINS Modifiers

(*) Important: See “Tags are stored as Float” on page 67

examples:

address	point to
A5	the Word at address 5 in the Auxiliary Area (equivalent to AW5)
AS5	the Signed Word at address 5 in the Auxiliary Area
A2#5	the bit 5 from the Word at address 2 in the Auxiliary Area
E0:S3	the signed Word at address 3 from the Extended Data Memory 0

Table 84: FINS address examples

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for the other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 85: Tag Status meaning

5.7.3.2 Global Device Address

The global device address is used in the topic definition or in the Tag definition. If it is used in the Tag definition, it will be separated from the value name by a coma.

5.8 S5-AS511 IO Server

5.8.1 Introduction

This IO server is intended for use with Siemens S5 PLCs communicating via the front programming port using AS511 protocol. The AS511 protocol is specific for each Siemens device. This IO Server has been designed to operate with a set range for Siemens equipment. Use of the IO Server on devices other than those listed is not recommended and not supported.

The Siemens S5 PLC family has a unique memory structure. Data within the PLC are not located at fixed locations within the PLC's memory space. This memory space is continuously updated and revised as you create and modify your PLC logic. When these revisions occur, the location of key data elements such as flags, timers, counters, I/O and data blocks can move around in the PLC's memory. The Siemens S5 IO Server has been designed to read the location of these memory elements when the driver first begins operation upon detecting a communication error or after a request (which is not a read or a write request) has been transmitted to the PLC. If you change your PLC configuration you must restart the Siemens S5 IO Server or simply unplug/re-plug the connection cable. Both actions will cause the Siemens S5 IO Server to reacquire the location of all PLC memory elements.

5.8.2 Setup

IO Server: S5-AS511 Edit Clear Global Config 14/05/2006 22:37:50

S5-AS511 IO Server settings (This IO server configures interface with SIEMENS S5 CPUs)

Topic A : ☐ Enabled

Topic Name: A

Global Device Address: SER1 Port (COM:1) Serial port

Poll Rate: MS Default: 2000

Topic B : ☐ Enabled

Topic Name: B

Global Device Address: SER1 Port (COM:1) Serial port

Poll Rate: MS Default: 2000

Topic C : ☐ Enabled

Topic Name: C

Global Device Address: SER1 Port (COM:1) Serial port

Poll Rate: MS Default: 2000

Update Config Cancel

Figure 86: S5-AS511 IO server setup window

5.8.3 Communication setup

The AS511 link uses a RS-232 Current Loop functioning mode.

A specific cable (with electronic) is therefore required (Siemens S5 Cable : ACT'L ref EW40910)

The communication parameters are fixed to the following values:

- 9600 Baud (Fixed)
- Even Parity (Fixed)
- 8 Data Bits (Fixed)
- 1 Stop Bit (Fixed)
- Full duplex no handshaking (Fixed)

5.8.3.1 Supported Devices

<ul style="list-style-type: none"> • Siemens S5 - 90U • Siemens S5 - 95U • Siemens S5 - 100U - 100 • Siemens S5 - 100U - 101 • Siemens S5 - 100U - 103 • Siemens S5 - 101U 	<ul style="list-style-type: none"> • Siemens S5 - 115U - 941 • Siemens S5 - 115U - 942 • Siemens S5 - 115U - 943 • Siemens S5 - 115U - 944 • Siemens S5 - 115U - 945
--	---

Table 86: Siemens S5 devices supported by the eWON AS-511 IO server

5.8.4 Tag name convention

IO server Name	S5-AS511	
Topic name	A or B or C	
Item Name	ValueName, ComPortNum	COM port is defined Tag by Tag
	ValueName	Topic COM port is used (or default)

Table 87: S5-AS511 IO server Tag name convention table

ComPortNum: The port number used to access the PLC; if not specified, the default COM port is used.

- If a port address is specified in the topic, it is used and overloads per Tag address.
- If no address is specified, neither in the topic, nor at the Tag level, then the default port is used (Default port is the ECIA Port - COM:1).

5.8.4.1 ValueName

DBxLy	Data block x Word offset y, left byte of word (0 - 255)
DBxRy	Data block x Word offset y, right byte of word (0 - 255)
DBxWy	Data block x Word offset y, full word (0 - 65535)
DBxDy	Data block x DWord offset y (-2147483648->2147483647) (*)
Tx or Kx	Timer x (0-65535)
Cx or Zx	Counter x (0-65535)
MxB or FxB	Memento as Byte
MxW or FxW	Memento as Word
MxD or FxD	Memento as DWord (*)
Ix or Ex	Input
Qx or Ax	Output

Table 88: S5-AS511 IO server value names

(*) Important: See “Tags are stored as Float” on page 67

• Bit access modifier:

In any of the above items, it is possible to access a single bit.
#x must be appended to the Value Name (Bit index goes from 0..31).
The syntax can be used for reading bits and for writing them as well.

Example:

DB1W13#3 represents bit 3 of W13 in DB 1

Q32B#0 represents bit 0 of Q32.

Note that you must define the type byte (B) to successfully extracts a bit (Q32#0 will not work).

REM:

Bit index range depends on item referenced (for W, bit index maximum value is 15)

NOTES:

- **For DB the smallest element is a WORD and we count addresses in Word.**
This means that DB1W0 and DB1W1 WILL NOT overlap.
- **Timers and Counters are always Words and addresses are counted in WORD as well.**
This means that T0 and T1 WILL NOT overlap.
- **For M, I, Q addresses are counted in BYTES.**
This means that M0W and M1W WILL overlap.
- **Both syntax (German and English) can be used for I, Q, C**
which in German gives: E, A, Z.

• Status register:

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status,ComPortNum

- You can define a status Tag for each COM port used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 89: Tag status meaning

5.9 ABLOGIX IO Server

5.9.1 Introduction

ABLogix IO server is used to communicate with Allen Bradley Logix Series PLCs on the Ethernet link or on the Serial link (in DF1 protocol).

- It allows the eWON to poll ABLOGIX PLCs in order to read data.
- It allows the eWON to act as EIP-DF1 gateway for remote maintenance of the ABLOGIX PLCs.
- It allows the eWON to poll DH+ device using ControlLogix gateway.

The eWON only allows DF1 communication with devices directly connected to the eWON Serial link (the ABLOGIX PLC may not be located behind another PLC connected on the DF1 serial link acting itself as gateway).

note: Please check in the "Rockwell compatibility matrix" on page 204 if your device is supported.

5.9.2 Setup

IO Server: ABLOGIX <input type="button" value="Edit"/> <input type="button" value="Clear"/> <input type="button" value="Init"/>	Global Config	30/09/2008 14:53:07
--	----------------------	---------------------

LOGIX 5000 IO Server settings (This IO server configures interface with AB LOGIX 5000 devices)		
COM Setup (Duplicate of DF1 IO server)		
Baud Rate:	<input type="text" value="9600"/>	Default: 9600
Parity:	<input type="text" value="None"/>	Default: NO
Stop Bit(s):	<input type="text" value="1"/>	Default: 1
Frame Error Detection:	<input type="text" value="CRC"/>	Default: CRC
HW Mode:	<input type="text" value="Full Duplex NO Handshaking"/>	Default: Full Duplex
Master response timeout:	<input type="text" value=""/> MS	20..60000, default: 1000
Rx message timeout:	<input type="text" value=""/> MS	1000..60000, default: 3000
Tx message timeout:	<input type="text" value=""/> MS	1000..60000, default: 3000
eWON DF1 Address	<input type="text" value=""/>	Device address of eWON on DF1 link (0..254, default: 4)
Destination DF1 Address	<input type="text" value=""/>	Device address of destination on DF1 link when EIP is used (0..254, default: 1)
Bridge EIP Connection	<input checked="" type="checkbox"/> Enabled	Forwarding of EIP open connection requests is mandatory for LOGIX PLCs
Topic A : <input type="checkbox"/> Enabled		
Topic Name:	A	
Global Device Address:	<input type="text" value=""/>	IP Address[,Port Address, Link Address]
Poll Rate	<input type="text" value=""/> MS	Default: 2000
Topic B : <input type="checkbox"/> Enabled		
Topic Name:	B	
Global Device Address:	<input type="text" value=""/>	IP Address[,Port Address, Link Address]
Poll Rate	<input type="text" value=""/> MS	Default: 2000
Topic C : <input type="checkbox"/> Enabled		
Topic Name:	C	
Global Device Address:	<input type="text" value=""/>	IP Address[,Port Address, Link Address]
Poll Rate	<input type="text" value=""/> MS	Default: 2000

Figure 87: ABLOGIX IO server setup window

5.9.2.1 Communication Setup

In the current implementation, the serial link configuration may be done using the DF1 IO Server configuration page or the AB LOGIX IO server page.

The same settings apply for both IO servers (DF1 and ABLogix).

note: In the config.txt file the serial link parameters are defined in the DF1 IO server entry.

Baud Rate	Select the Baudrate from 1200 to 38400 Bauds
Parity	The parity to apply: none / odd / even
Stop Bit(s)	Number of stop bits
Frame Error Detection	Cyclic Redundancy Check (CRC) or Block Check Character (BCC)
HW mode	Full Duplex no handshaking or Half duplex
Master Response Timeout	Maximum time the eWON will wait for a valid message from the DF1 master. This value can be critical for a correct operation, depending on the responsiveness of the master. A value of 1000 should be selected to guarantee correct operation
Rx message timeout (MSEC)	Maximum time between a request is posted and the response is received
Tx message timeout (MSEC)	Maximum time for a request to be sent
eWON DF1 address	Device Address of eWON on DF1 link When the eWON acts as a DF1 slave, it will respond to 2 consecutive link addresses; doing this improves the throughput of data across the eWON when acting as a gateway. (eWON DF1 address and eWON DF1 address +1)
Destination DF1 address	Device Address of Destination on DF1 link when EIP is used
Bridge EIP connection	When bridging is configured, EIP connections requests are forwarded to the PLC on the DF1 interface (mandatory for Logix family). This is the default configuration. When not configured, connection requests are cancelled by the eWON (must be disabled for SLC family).

Table 90: ABLOGIX-DF1 communication setup controls

5.9.2.2 Topic configuration

Three topics can be used for the IO Server. These topics are used to give a common property, to a group of Tags, like:

- **Enable/Disable**
- **Global Device Address**
- **Poll rate**

Topic configuration item	Description
Topic enabled	Enables or disables the polling of all the Tags in the topic
Global Device Address	The Global Device Address is a global parameter for all the Tags of the topic. See below for the Device Address syntax. If an address is specified here, it will replace (overload) the address defined Tag by Tag
Poll rate	Defines the refresh rate (in mSec) of the Tag name. In a complex application, we can imagine that some Tag name must be refreshed every second – typically for digital input - and other every minute – typically: temperature-

Table 91: ABLOGIX topics configuration setup

5.9.2.2.1 ABLogix : DF1 serial link

The Global Device Address has the following syntax: **Address**

- **Address** = DF1 Node ID of the device (i.e.: 5)



Figure 88: ABLogix : DF1 address example

5.9.2.2.2 ABLogix : EIP Ethernet link

The Global Device Address has the following syntax : **IP Address,Port,Link**

- **IP Address** = address on your Ethernet network (i.e.: 10.0.30.7)
- **Port** = value from 1 to 3 representing: 1 = Backplane, 2 = Channel A, 3 = Channel B
- **Link** could be:
 - **Slot**: representing the Slot on the Backplane (for example: 0=CPU)
 - **Node ID**: value from 0 to 99 (for ControlNet)
 - **IP address**



Figure 89: ABLogix : EIP address example

REM: In the case of using a ControlLogix as Gateway, the Device Address could be like following: IP Address, Port, Link[, Port,Link][, Port,Link]...

5.9.2.2.3 DH+ polling using ControlLogix gateway

This feature allows the eWON to poll PLC tags located on a DH+ network, behind a controllogix equipped with one or more DHRIO cards. Polling is done using the eWON EIP protocol.

The ABLOGIX IO server is used to access the "LOGIX" PLC family.

The DF1 IO server is used to access the "SLC500" PLC family (See "DH+ polling using ControlLogix gateway" on page 102).

The general syntax *IP address,Port,Link* is still applicable. There is no specific character to indicate the DH+ channel ("2" or "3" should be used).

Example: To reach a PLC5 (with CPU in slot 0) with DH+ node Id 3 using channel A of a DHRIO card at slot 9 of a controllogix at IP address 10.0.30.21.

Topic A Destination = **SLC500-10.0.30.21,1,9,2,3,1,0**

- **10.0.30.21** = IP address of the ControlLogix
- **1** = BackPlane
- **9** = Slot 9 (COM card)
- **2** = Channel A (of the Card present in Slot 9)
- **3** = NodeID of the PLC5 (in the COM network)
- **1** = BackPlane
- **0** = slot (of the CPU in our example)

5.9.3 Tag name convention

IO Server Configuration		
IO server Name	ABLOGIX	
Topic name	A or B or C	
Item Name	ValueName	Topic PLC address is used
	ValueName, IP address[, Port, Link]	PLC address is defined Tag by Tag
	ValueName, NodeID	PLC address is defined Tag by Tag

Table 92: ABLOGIX IO server Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at topic level, the address specified at Tag level will be ignored.

5.9.3.1 ValueName

ValueName follows the below syntax:

[PROGRAM:ProgName.]SymbolicTagName

- **ProgName is the name of the program where the Tag is.**

If no ProgName, the Tag is in the global scope (tag is controller type)

- **SymbolicTagName:**

- Symbol of the tag.
Only following atomic type are supported: BOOL, SINT, INT, FLOAT, DINT (*), BIT ARRAY
- Bit selection with <SymbolicTagName>/bit
where bit is the bit number (from 0 to 31)
ex: controlbit/4 read the bit 4 of the controlbit register
- TIMER, CONTROL, COUNTER predefined types with <SymbolicTagName>.acc (or ctl or pre)
ex: MyVar.acc read the counter of MyVar
- Element of a table
<Symbol_1>[idx_1].<Symbol_2>[idx_2].<Symbol_3>[idx_3].<Symbol>
With maximum 3 index.
ex: table1[2].subtable[6].element read data named 'element' on the index 6 of the 'sub table' from the index 2 of the 'table1'
- Element of a structure
<Symbol_1>.<Symbol_2>
ex: CounterObj.init read the 'init' part of the structure 'CounterObj'

(*) Important: See “Tags are stored as Float” on page 67

- **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status,ComPortNum

- You can define a status Tag for each COM port used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 93: Tag status meaning

5.10 EWON IO Server

5.10.1 Introduction

The eWON IO server is used to interface the eWON INPUTS and OUTPUTS.

Depending on your eWON model, you have:

- **Digital inputs**
 - 1 on eWON500/2001/4001
 - 9 on eWON4002
- **Digital outputs**
 - 1 on eWON500/2001/4001
 - 3 on eWON4002
- **Analog inputs**
 - None on eWON500/2001/4001
 - 6 on eWON4002

Additionally, there are a number of Tags that can be addressed with this IO server and which are computed by the eWON IO Server.

These additional Tags are used for energy management. In Energy management, the following requirements are taken into accounts:

- **Using digital inputs as counter inputs**
- **Count for a given interval and latch computed result (also save it in historical)**
- **Reject the measurement interval if too long or too short**
- **Adjust the eWON's Real Time Clock based on a digital input**

These Tags will be computed if the energy module is enabled.

There is no topic name to define for the eWON IO server.

5.10.2 Standard eWON I/O Item Names

5.10.2.1 Tag name convention

The following Tags are available for standard eWON Inputs & Outputs access:

IO Server configuration		Comment		
IO Server Name	EWON			
Topic Name	Empty			
Item Name	DI#	Digital Input (1)		Boolean
	CI#	Counter Input (1)	0 to 2.147.400.000(2)	Analog
	FI#	Counter Input	0 to 255	Analog
	LI#	Latched Counter Input (1)		Analog
	DO#	Digital Output (1)		Boolean
	AI#	Analog Input (1)		Analog
	BI#	Button Input (1)		Boolean

Table 94: eWON IO server configuration parameters - no topic defined

NOTE:

The button input (BI1) can be used during normal eWON operations, if it is pressed for more than 4 seconds while the eWON is booting, the flash file system will be erased (please refer to chapter "Resetting the eWON" on page 201).

(1) The number of items depends of the eWON type. See Table 96 on page 118.

(2) From firmware 4.1S3 to 4.3, the CIx value wrapped at 1.000.000. Before 4.1S3, the CIx was misinterpreted as negative when value passes over 2^{31} .

IO Server configuration		Comment	
IO Server Name	EWON		
Topic Name	SYS		
Item Name	SN_LO	Serial number, low part (see example of use below)	Analog
	SN_HI	Serial number, high part (see example of use below)	Analog
	SYS_UP	Number of seconds since Power Up	Analog
	GSM_REG	GSM Status: 1: Home network 2: Searching registration 3: Registration denied 4: unknown registration 5: Roaming 100: Not applicable 101: Registration in progress usually: 1 or 5: means registered Other: not registered	Analog
	GSM_LEV	GSM level (antenna reception)	Analog

Table 95: eWON IO server configuration parameters - SYS topic

Example of use of SN_LO and SN_HI items in a Basic program:

```

a% = Int(SN_HI@ * 65536) + Int(SN_LO@)
Rem Product code
b% = a% Mod 256
Rem Sequential number
c% = Int(a% / 256) Mod 1024
Rem Week number
d% = Int(a% / 262144) Mod 64
Rem Year number
e% = Int(a% / 16777216) Mod 128
Print "SN: ";e%; " ";d%; "-" ;c%; "-" ;b%

```

For instance, you can define a Tag for the digital input 1 as follows:

Server name: EWON - **Topic:** empty - **Address:** DI1

eWON500	DI1	Status of input 1 on connector Input/output (bottom side)
eWON2001	CI1	Counter on input 1 on connector Input/output (bottom side)
eWON4001	LI1	Latched counter on input 1 on connector Input/output
eWON4101	DO1	Digital command of output 1 on connector Input/output
eWON2005	BI1	Status of button (reset) on the front face
eWON4005		

Table 96: Available Items for eWON product type

eWON4002 eWON4102	DI1... DI8	Status of input 1 to 8 on connector DI1-DI8 (top side)
	CI1... CI8	Counter on input 1 to 8 on connector DI1-DI8 (top side)
	LI1... LI8	Latched counter on input 1 to 8 on connector DI1-DI8 (top side)
	DI9	Status of input 9 on connector Input/output (bottom side)
	CI9	Counter on input 9 on connector Input/output (bottom side)
	LI9	Latched counter on input 9 on connector Input/output (bottom)
	DO1... DO2	Digital command of relay 1 and 2 on relay connector (bottom side)
	DO3	Digital command of output 1 on connector Input/output (bottom)
	BI1	Status of button (reset) on the front face
	AI1... AI4	Value of analog input 1 to 4
	AI5... AI6	Value of analog input 5 to 6 (PT100 probes)

Table 96: Available Items for eWON product type

5.10.2.2 Energy configuration with the Llx Tags

The following parameters can be added to the eWON IO server in order to activate the energy support (enter *Energy:1*, validate and the other parameters will be automatically added):

Parameter	Default Value		
Energy	0 or 1	Enabled or not	Once Energy is defined, the eWON will automatically add the other parameters with default value. When 0, no energy computation at all are performed, saving eWON CPU resources.
Debug	0 or 1	Not automatically added	When :1 all synchronisations are logged in the Real time event log.
RefTime		This is the reference time to compute interval. Letting this empty will start at 1/1/1970 00:00. You may enter a date with hour in the form 08/07/2002 11:15:00 to set a new reference (usually not required).	
IntTime	15	This is the integration time in MINUTES.	
IntToIS	5	This is a tolerance on the integration time in SECONDS. If the measurment interval is shorter or longer than this number of seconds, the period is considered as valid. For example IntTime=15 IntToIS =5 means "interval is valid if between 11.14:55 and 11.15:05".	
SyncIO	5	This is the IO number for clock synchronization. 0 means no synchro available, 1..8 is the IO number. Synchronisation is based on the counter input associated with the digital input, each time the IO changes the eWON will try to perform a synchronization (see also SyncToIS)	
SyncToIS	5	This is the tolerance for accepting the synchronization pulse in SECONDS. If the synchronization pulse arrives outside the interval, the pulse is rejected. ERROR REPORT: the first time the pulse is rejected, an error is logged in the event log. Next errors are not logged (except in Real time log if Debug is enabled); When sync are accepted again, a trace is logged in the event file for the first accepted synchronization. REM: Because the internal clock has a precision of 1 second, the time is only updated if the absolute value of the offset is greater than 1 (2 or more). Otherwise the offset jitters between -1 and +1 all the time.	

Figure 90: Energy IO server parameters

IO Server: EWON	Edit	Clear	Global Config	14/05/2006 22:37:50
-----------------	------	-------	---------------	---------------------

IO Server: EWON

```

MinInterval:10
MaxInterval:268435455
ReverseCount:0
Energy:1
RefTime:
IntTime:15
SyncIO:0
SyncToIS:5
IntToIS:5

```

Update Cancel

Figure 91: eWON IO server default parameters

5.10.2.2.1 ENERGY TAGS

The following tags are available for energy management:

LI1..LI8	Latched input	When the Integration Period expires, the number of pulses counted during the integration period are logged in the corresponding Lix.
ST1..ST4	Status variables:	
ST1	This is the absolute time when counter were latched. Expressed in seconds since 1/1/1970 minus 0x30000000 HEX (or 805306368 decimal). This huge value is subtracted to maintain precision in the Float storage. (*)	
Latch time - 0x30000000		
ST2	0 means period is valid (within tolerance), 1 means period is invalid.	
Period status		
ST3	Length of the period in second.	
Period length sec		
ST4	This 32 bit counter counts is increased by 1 after each integration period. It can be used with ONCHANGE to perform operations when period expires.	
Period Num		

REM1: Energy tags are logged after each new period IF Logging is enabled, even if the value has not changed since previous period.

REM2: Even if Deadband is -1 and Interval is 0. If not, you will have additional points and even maybe duplicate points.

(*) Important: See "Tags are stored as Float" on page 67

5.10.2.2.2 32 BIT COUNTER TAGS:

The eWON IO Server provides now 8 32 bits (*) counter tags named: CI1..CI8. These counters are writable but writing in these registers affects the Lix inputs of the Energy IO server module.

(*) Important: See "Tags are stored as Float" on page 67

5.10.2.3 Analog Input Value Range (eWON4002)

The Analog Inputs (AI1 to AI6) come from a 12 bits ADC. Then, the values read on a AI# tag go from 0 to 4095.

5.10.2.3.1 Configurable analog input AI1 to AI4

- In 0-10V mode

AI#	Volt
0	0
4095	10

If you need to read the Tag value converted in Volt, you can set a factor of $0.0024420 = 10/4095$ with an offset of 0.

The screenshot shows the configuration interface for Tag AI1. It is divided into two main sections: Identification and I/O Server Setup.

Identification Section:

- Tag Name: Tag_AI1
- Page: Default
- Tag Description: (empty text area)

I/O Server Setup Section:

- Server Name: EWON
- Topic Name: (empty text field)
- Address: AI1
- Type: Analog
- Force Read Only: (unchecked checkbox)
- eWON value = IO Server Value * 0.002442 + 0

Figure 92: Tag's configuration: reading the tag value in Volt

- In 0-20 mA mode

The shunt resistor for measuring current is a 220 Ohm.

AI#	mA
0	0
1802	20

If you need to read the Tag value converted in mA, you can set a factor of $0.011099 = 20/1802$ with an offset of 0.

The screenshot shows the configuration interface for Tag AI2. It is divided into two main sections: Identification and I/O Server Setup.

Identification Section:

- Tag Name: Tag_AI2
- Page: Default
- Tag Description: (empty text area)

I/O Server Setup Section:

- Server Name: EWON
- Topic Name: (empty text field)
- Address: AI2
- Type: Analog
- Force Read Only: (unchecked checkbox)
- eWON value = IO Server Value * 0.011099 + 0

Figure 93: Tag's configuration: reading the tag value in mA

5.10.2.3.2 PT100 input AI5 and AI6

These two entries measure a Resistance value in Ohm.

AI#	Ohm
0	162.13
4095	79.625

As you can see, the slope is negative, and if you need to read the Tag value converted in Ohm, you can set a factor of $-0.02014774 = -82.505/4095$ with an offset of 162.13.

The screenshot shows the configuration interface for a tag. The 'Identification' section includes a 'Tag Name' field set to 'Tag_PT100' and a 'Page' dropdown set to 'Default'. The 'Tag Description' field is empty. The 'I/O Server Setup' section includes a 'Server Name' dropdown set to 'EWON', a 'Topic Name' field, an 'Address' dropdown set to 'AI5', a 'Type' dropdown set to 'Analog', and a 'Force Read Only' checkbox. Below these fields, a formula is displayed: 'eWON value = IO Server Value * -0.0201477 + 162.13'.

Figure 94: Tag's configuration: reading the tag value in Ohms

If you need to convert into °C: $\text{temperature} = \text{AI} * (-0.0523311) + 161.376$.

The default range of PT100 in eWON is -50°C to 150°C.

Full range of ADC is: -52.92°C to 161.376°C (79.625 Ohm to 162.13 Ohm).

Note:

- eWON 4002 models prior to S/N 0517-xxxx-89 have a PT100 range from 0°C to 131.9°C and must apply the following formulas:
 $\text{Ohm} = \text{IOValue} * (-0.012402) + 150.8$
 $^{\circ}\text{C} = \text{IOValue} * (-0.0322) + 131.9$
- eWON 4002 models from S/N 0517-xxxx-89 to S/N 0521-xxxx-89 have a PT100 range from -56°C to 151°C and must apply the following formulas:
 $\text{Ohm} = \text{IOValue} * (-0.0195068) + 158.2$
 $^{\circ}\text{C} = \text{IOValue} * (-0.050677) + 151.2$

5.10.3 Setup

The Energy IO Server is based on the eWON IO Server. The configuration consists in advanced parameters from the latter IO Server. The following screen shot shows the standard empty eWON IO Server configuration page.

Figure 95: eWON IO server configuration page

5.10.3.1 Configuration of the counter pulse length

The pulse length for counter can be configured on all the eWON types.

The configuration must be entered in the eWON IO server edit area.

The following parameters are used:

MinInterval:	default=10, min=10
MaxInterval:	default=268435455, max=268435455
MinInterval and MaxInterval are entered in milliseconds	
ReverseCount:	default=0
The pulse length must be between MinInterval and MaxInterval to be accepted, the measurement resolution is 5 msec (the precision of the pulse length measured is 5 msec)	
ReverseCount can be used if pulses entered in the eWON are reversed, reversed means that signal is normally high on the eWON input and it goes low when the pulse occurs.	

Table 97: counter pulse length configuration

Example of configuration:

MinInterval:40
MaxInterval:1000
ReverseCount:0

Counts pulse with length longer than 40 msec and shorter than 1000 msec, other pulses are ignored.

5.11 MEM IO Server

5.11.1 Introduction

The MEMORY IO Server is not a real IO server because values do not come from a peripheral. Memory Tags (Tags defined with the MEM IO server) are rather sorts of variables that can be modified by a user input or by a BASIC application. These Tags are very useful for combining different Tags and consider the result as an actual Tag i.e. having data logging capabilities and alarm management capabilities like for all other Tags.

5.11.2 Setup

There is no setup for the MEM eWON IO server.

5.11.3 Tag name convention

IO Server configuration		
IO Server Name	MEM	
Topic Name		If no topic is specified, the Tag is a standard memory Tag. Its value is set to 0 when the eWON boots and the Tag is read/write, it can be updated through user actions with script or web pages
	RET	If topic is set to RET, the Tag is retentive, each change is saved to flash and when the eWON boots, the last value of the Tag is restored. This feature can be convenient to use Tags as parameters.
Item Name	DON'T CARE	The MEM "Item Name" is insignificant, the Tag name is automatically copied in the MEM address by the eWON, the user can change it, but the value will immediately be overwritten again by the Tag name.

Table 98: MEM IO server Tag name convention

Important: RET values are saved in the FLASH memory, this is not an immediate operation and the FLASH memory can only be written and erased a limited (even if huge 100.000) number of times. This means that you should not use a BASIC script for changing retentive values at very high rate. 1 Tag/Sec. is a maximum AVERAGE rate (occasional higher rates are not prohibited at all).

5.12 S7-300&400 (MPI/Profibus - ISOTCP)

5.12.1 Introduction

S73&400 IO Server is dedicated to communicate directly with SIEMENS PLC (S7-300 & S7-400).
The eWON will connect directly to the PLC's MPI interface or Profibus DP interface.

WARNING: The MPI/Profibus interface requires a special serial port hardware!

ONLY the eWONs MPI/Profibus are able to communicate in MPI/Profibus

eWON product codes like EWxxx6x (i.e.: EW41264 eWON4001 MPI with pstn modem)

eWONs MPI/Profibus have a Serial Gender-Changer fixed on DB9 connector to provide female DB9 connector.

eWONs MPI/Profibus have a coloured (in light blue) square around DB9 connector labeled MPI (see photo on right).

Others Serial IO Server (i.e.: PPI, modbus RTU) are not available on eWON MPI/Profibus.

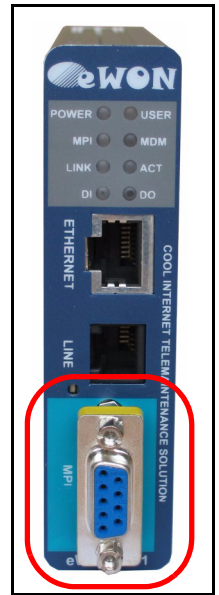
The ISOTCP (Ethernet) is available on all eWON types.

With an eWON500 (with a standard Serial Port), you can have access to a S7-300&400 Siemens PLC by Ethernet thanks to the ISOTCP protocol.

With an eWON500-MPI, you can have access by the MPI port **and** by ISOTCP to your S7-300&400, if it has both interfaces.

Multi-Session: Since firmware 5.4, the ISOTCP-MPI gateway allows multiple clients to access the same PLC at the same time.

PPI MultiMaster (for S7-200): Since firmware 5.5, it is supported by the MPI port of the eWON (See "S7-200 (PPI - ISOTCP)" on page 130)



5.12.2 Setup

5.12.2.1 COM configuration

IO Server: S73&400 Edit Clear Init		Global Config	10/10/2008 10:52:05
S73 & 400 IO Server & Gateway settings			
Gateway Configuration			
Destination MPI/PROFIBUS Node:	destination Node		0..126, default: 2
MPI/PROFIBUS Setup			
Protocol Type:	MPI	Default MPI. PPI Multimaster may only be used with the S7200 Io server	
Baud Rate:	187500	Default 187500	
Reply Timeout:		MS	50..50000, default: 3000
MPI/PROFIBUS Address:	10	Device address of eWON on link (0..126, default: 0)	
MPI/PROFIBUS Highest Station Address:	31	Default: 31	

Figure 96: MPI link configuration

Parameter	Description
Gateway MPI/Profibus Destination Node	Identifies the PLC MPI/Profibus Destination address when ISOTCP is used
Protocol Type	<p>Select protocol MPI or PROFIBUS.</p> <p>As the MPI port configuration is shared by the S73&400 and the S7-200 IOServers, this combo box shows also the PPI MULTIMASTER protocol (See "S7-200 (PPI - ISOTCP)" on page 130)</p> <p><i>PPI MultiMaster and MPI/Profibus are mutually exclusive. It is not allowed to use the S7-200 and the S73&400 IOServers on the MPI port at the same time</i></p>

Figure 97: MPI/Profibus settings

Baud Rate	Speed of the MPI port. Available speeds are: <ul style="list-style-type: none"> • disable • 9.6 kBauds • 19.2 kBauds • 45.45 kBauds • 93.75 kBauds • 187.5 kBauds • 1.5 MBauds • 3 MBauds (only for 2005CD-MPI or 4005CD-MPI) • 6 MBauds (only for 2005CD-MPI or 4005CD-MPI) • 12 MBauds (only for 2005CD-MPI or 4005CD-MPI)
Reply Timeout	The maximum time the eWON will wait for a valid MPI message response
MPI Address	The device address of the eWON on the MPI link (0..126, default is 0)
MPI Highest Station Address	The highest station address polled by eWON. Select between 15, 31, 63 or 127.

Figure 97: MPI/Profibus settings

5.12.2.2 Topic configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Global Device Address:	MPI,7	MPI/PROFIBUS, destination Node or ISOTCP, ISOTCP address
Poll Rate	MS	Default: 2000
Topic B :		<input checked="" type="checkbox"/> Enabled
Topic Name:	B	
Global Device Address:	PROFIBUS,9	MPI/PROFIBUS, destination Node or ISOTCP, ISOTCP address
Poll Rate	MS	Default: 2000
Topic C :		<input checked="" type="checkbox"/> Enabled
Topic Name:	C	
Global Device Address:	ISOTCP,10.0.120.204,03.02	MPI/PROFIBUS, destination Node or ISOTCP, ISOTCP address
Poll Rate	MS	Default: 2000

Figure 98: Topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of MPI/ISOTCP Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Device Address	See below for the Device Address Syntax. If an address is specified here, it will replace (overload) the address-defined Tag by Tag.
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

5.12.3 Tag name convention

IO Server Name	S73&400	
Topic Name	A	
	B	
	C	
Item Name	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 99: S73&400 IO server - Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at the topic level, the address specified at Tag level will be ignored.

5.12.3.1 Value Name

The syntax is the following:

<Memory Type><Modifier><address>

Symbol	Memory Type	Modifier	Address
DBx	Data Block number x	B, C, W, S, D, L, F	Byte offset
M	Internal Memory	B, C, W , S, D, L, F	Byte offset
C	Counter	W , S	Object number
T	Timer	W , S	Object number
I	Discrete Inputs	B, C, W , S, D, L, F	Byte offset
Q	Discrete Outputs	B, C, W , S, D, L, F	Byte offset
PI	Peripheral Inputs	B, C, W , S, D, L, F	Byte offset
PQ	Peripheral Outputs	B, C, W , S, D, L, F	Byte offset

Table 100: S7 300-400 Memory types

Important: All the addresses are always in BYTES (except for Counter and Timer that are objects)

Note: The Modifier can be omitted, the modifier in bold will be used (DB type must have a modifier).

Symbol	Modifier	value range
B	Byte	0 .. 255
C	signed Byte	-128 .. 127
W	Word	0 .. 65535
S	signed Word	-32768 .. 32767
D	DWord	0 .. 4294967296 (*)
L	signed DWord	-2147483648 .. 2147483647 (*)
F	Float	+/- 3.4e38

Table 101: S7 300-400 Modifiers

(*) Important: See "Tags are stored as Float" on page 67

Examples

address	point to
MW4	the Word at address 4 (in bytes) in the Internal Memory
CS1	the Counter number 1, read it as Signed Word
DB2L5	the DWord at address 5 (in bytes) in the Data Block 2
IB3	the Byte at address 3 (in bytes) in the Discrete Inputs zone
I5#2	the bit 2 from the Byte (read 'Bit access modifier' note below) at address 5 in the Discrete Inputs zone

Table 102: S7 300-400 register address examples

- **Bit access modifier:**

In any Memory Type (excluding Counter and Timer), it is possible to access a single bit.

A **#x** must be appended to the Value name.

As the address is always in byte, the Bit index goes only from 0 to 7, no Modifier are allowed (except B to separate DB block from the address).

The syntax can be used for reading bits and for writing them as well.

Example:

DB1B13#3 represents bit 3 of Byte 13 in DB 1

invalid: IW5#2 wrong because there is a Modifier

I5#10 wrong because bit number greater than 7

- **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 103: Tag Status meaning

5.12.3.2 Global Device Address

The device address is either appended to the ValueName in the Item Name definition or entered in the Topic global address fields.

The device address is composed like following:

MPI	
MPI, <i>MPI node address</i>	node address: MPI node address of the PLC
	Topic Name: A
	Global Device Address: MPI,2
	Reach by MPI the PLC with the node address 2
PROFIBUS, <i>Profibus node addr</i>	node address: PROFIBUS node address of the PLC
	Topic Name: A
	Global Device Address: PROFIBUS,9
	Reach by Profibus the PLC with the node address 9
ISOTCP	
ISOTCP, <i>IP address, CalledTSAP</i>	IP address : IP address of the PLC (ex: 10.0.120.204)
	Called TSAP : Transport Service Access Point (ex: 03.02)
	Topic Name: B
	Global Device Address: ISOTCP,10.0.120.204,03.02
	Reach by ISOTCP the PLC at IP 10.0.120.204 with the TSAP 03.02
ISOTCP, <i>IP address, CalledTSAP, Subnet ID, MPI node address</i>	IP address : IP address of the PLC (ex: 10.0.120.204)
	Called TSAP : Transport Service Access Point (ex: 03.02)
	Subnet ID : ID of the MPI subnet
	MPI node address : address of the PLC
	Topic Name: B
	Global Device Address: ISOTCP,10.0.120.204,03.02,0020-0001,2

Table 104: MPI/ISOTCP device address syntax

Important:

If the PLC address is defined at the Topic level, it can be omitted in the Tag definition. In that case the Tag name will only contain the "ValueName".

If the PLC address is specified at the Topic level, it will replace any address defined Tag by Tag.

note:

For an S7-300, it's generally always 03.02 .

For an S7-400, you have to take into account the slot number of the CPU.

For example if the CPU is on slot 4 rack 0 use TSAP 03.04, if the CPU is on slot 5 rack 1 use TSAP 03.25.

5.13 S7-200 (PPI - ISOTCP)

5.13.1 Introduction

The S7200 IO Server is dedicated to communicate directly with SIEMENS PLC of family S7-200.
The eWON will connect directly to the PLC's PPI interface.

Since firmware 5.5, eWONs with an MPI port are able to communicate on a PPI MultiMaster bus.

Then, to communicate with a S7-200 device you could use either an eWON with a serial port or an eWON with an MPI port.

Usage	eWON with SERIAL port (EWxxx0x)	eWON with MPI port (EWxxx6x)
MonoMaster eWON is the ONLY Master on the PPI network.	Yes	Yes (since firmware 5.5)
MultiMaster eWON is not the only Master on the PPI network. Other masters (HMI or PPI multimaster programming cables) may be present at the same time on the PPI bus.	No	Yes (since firmware 5.5)

Table 105: PPI MonoMaster/MultiMaster usage

The eWON acts always as MASTER.

The standard serial port of eWON must be configure in RS-485 (with dipswitch) to communicate in PPI.

The ISOTCP (Ethernet) is available on all the eWON types.

5.13.2 Setup

5.13.2.1 Gateway configuration

Figure 99: Gateway parameters

Parameter	Description
Destination PPI Address	Identifies the PLC PPI Destination address when ISOTCP is used

5.13.2.2 COM configuration (serial port)

Figure 100: PPI link configuration

Parameter	Description
COM Port	Choose your COM port (only on eWON4002)
Baud Rate	Speed of the PPI port. Available speeds are 9600, 19200 Bauds or disable
Parity	The parity to apply (None / Even / Odd)
Databits	Number of bits in data (7 or 8)
Stop bit(s)	Number of Stop bits (1 or 2)
HW mode	Choose the Hardware mode of communication: Half-Duplex by default or Full Duplex with/without hardware handshaking.
Reply Timeout	Maximum time the eWON will wait for a valid PPI message response
PPI Address	Device address of eWON on PPI link (0..126, default is 0)

5.13.2.3 COM configuration (MPI port)

MPI/PROFIBUS/PPI MultiMaster Setup		
Protocol Type:	<input type="text" value="PPI MULTIMASTER"/>	Default MPI. PPI Multimaster may only be used with the S7200 Io server
Baud Rate:	<input type="text" value="187500"/>	Default 187500
Reply Timeout:	<input type="text" value=""/> ms	50..50000, default: 3000
MPI/PROFIBUS/PPI MultiMaster Address:	<input type="text" value="10"/>	Device address of eWON on link (0..126, default: 0)
MPI/PROFIBUS/PPI MultiMaster Highest Station Address:	<input type="text" value="31"/>	Default: 31

Figure 101: MPI link configuration

Parameter	Description
Protocol Type	Select protocol PPI MULTIMASTER . As the MPI port configuration is shared by the S7-200 and the S73&400 IO Servers, this combo box shows also the MPI & Profibus protocols. <i>PPI MultiMaster and MPI/Profibus are mutually exclusive. It is not allowed to use at the same time the S7-200 and the S73&400 IO Servers on the MPI port.</i>
Baud Rate	Speed of the MPI port. Available speeds are: <ul style="list-style-type: none"> • disable • 9.6 kBauds • 19.2 kBauds • 45.45 kBauds • 93.75 kBauds • 187.5 kBauds • 1.5 MBauds • 3 MBauds (only for 2005CD-MPI or 4005CD-MPI) • 6 MBauds (only for 2005CD-MPI or 4005CD-MPI) • 12 MBauds (only for 2005CD-MPI or 4005CD-MPI)
Reply Timeout	The maximum time the eWON will wait for a valid MPI message response
PPI MultiMaster Address	The device address of eWON on PPI link (0..126, default is 0)
PPI Highest Station Address	The highest station address polled by eWON. Select between 15, 31, 63 or 127.

Figure 102: PPI MultiMaster settings

Note: When using the PPI MultiMaster, the status counters to be checked are the MPI counters and not the PPI counters.

5.13.2.4 Topic configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000
Topic B :		<input checked="" type="checkbox"/> Enabled
Topic Name:	B	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000
Topic C :		<input checked="" type="checkbox"/> Enabled
Topic Name:	C	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000

Figure 103: Topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of PPI/ISOTCP Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Device Address	See below for the Device Address Syntax. If an address is specified here, it will replace (overload) the address-defined Tag by Tag.
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

5.13.3 Tag name convention

IO Server Name	S7200	
Topic Name	A	
	B	
	C	
Item Name	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 106: S7200 IO server - Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at topic level, the address specified at Tag level will be ignored.

5.13.3.1 Value Name

The syntax is the following:

<Memory Type><Modifier><address>

Symbol	Memory Type	Modifier allowed	Address
M	Internal Memory	B, C, W , S, D, L, F	Byte offset
SM	Special Memory	B, C, W , S, D, L, F	Byte offset
V	Variable Memory	B, C, W , S, D, L, F	Byte offset
C	Counter	W , S	Object number
HC	High-Speed Counter	D, L	Object number
T	Timer	D, L	Object number
AI	Analog Inputs	W , S	Byte offset
AQ	Analog Outputs	W , S	Byte offset
I	Discretes Inputs	B, C, W , S, D, L, F	Byte offset
Q	Discretes Outputs	B, C, W , S, D, L, F	Byte offset

Table 107: S7200 Memory types and address scheme

Important: All addresses are always in BYTES (except for Counters and Timer that are objects).

Note: The Modifier can be omitted, the modifier in bold will be used.

Symbol	Modifier	value range
B	Byte	0 .. 255
C	signed Byte	-128 .. 127
W	Word	0 .. 65535
S	signed Word	-32768 .. 32767
D	DWord	0 .. 4294967296 (*)
L	signed DWord	-2147483648 .. 2147483647 (*)
F	Float	+/- 3.4e38

Table 108: S7200 Modifiers

(*) Important: See "Tags are stored as Float" on page 67

Examples

address	point to
MW4	the Word at address 4 (in bytes) in the Internal Memory
HCL1	the HighSpeed Counter number 1 and read it in Signed DWord
AQW5	the Word at address 5 (in bytes) in the Analog Output zone
IB3	the Byte at address 3 (in bytes) in the Discrete Inputs zone
I5#2	the bit 2 from the Byte (read the 'Bit access modifier' note below) at address 5 (in bytes) in the Discrete Inputs zone

Table 109: S7 200 register address examples

• Bit access modifier:

For Memory Type **M**, **SM**, **V**, **I** and **Q**, it is possible to access a single bit.

A **#x** must be appended to the Value name.

As the address is always in byte, the Bit index goes only from 0 to 7, and no Modifiers are allowed.

The syntax can be used for reading bits and for writing them as well.

Example:

AQ10#5 represents bit 5 of Byte 10 in Analog Output zone.

invalid: IW5#2 wrong because there is a Modifier

I5#10 wrong because bit number greater than 7

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for the other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 110: Tag Status meaning

5.13.3.2 Global Device Address

The device address is either appended to the ValueName in the Item Name definition or entered in the Topic global address fields. The device address is composed like the following:

PPI		
PPI, PPI node address	node address: PPI node address of the PLC	
	Topic Name:	A
	Global Device Address:	PPI,4
Reach by PPI the PLC with the node address 4		
ISOTCP		
ISOTCP, IP address, CalledTSAP	IP address : IP address of the PLC (ex: 10.0.120.204)	
	Called TSAP : Transport Service Access Point (ex: 4D.57)	
	Topic Name:	B
Global Device Address:		ISOTCP,10.0.120.204,4D.57
Reach by ISOTCP the PLC at IP 10.0.120.204 with the TSAP 4D.57		

Table 111: PPI/ISOTCP device address syntax

5.13.3.2.1 ISOTCP polling:

You can always use the TSAP 4D.57. This is the default TSAP for a Step 7-Micro/win connection.

If you specify your own connection in the S7-200, be sure to:

- use the same TSAP for the Server and the Client (ex: Local TSAP:12.00, Remote TSAP:12.00)
- Check the "Enable the Keep Alive function for this connection" feature for this connection otherwise the eWON will not be able to poll the device after a connection lost due to the eWON reboot.

Important:

If the PLC address is defined at the Topic level, it can be omitted in the Tag definition. In that case the Tag name will only contain the "ValueName".

If the PLC address is specified at the Topic level, it will replace any address defined Tag by Tag.

5.14 HITACHI IO Server

5.14.1 Introduction

The Hitachi IOServer allows the eWON to poll tags belonging to a HITACHI EH series PLC using its serial link or Ethernet interface. eWON uses standard H protocol (for serial RS232), station number H protocol (for serial RS485), and Ethernet H-protocol (for Ethernet).

No remote maintenance functionality is provided by this IO server.

5.14.1.1 Setup

5.14.1.1.1 COM configuration

HITACHI IO Server settings (eWON is acting as a HITACHI IO master)		
COM Setup		
Baud Rate:	9600	Default: 9600
Parity:	None	Default: NO
Databits:	7	Default: 7
Stop Bit(s):	1	Default: 1
HW Mode:	Full Duplex HW Handshaking	Default: Full Duplex
Reply Timeout:	M5	50..50000, default: 3000

Figure 104: HITACHI IOServer: COM setup

Parameter	Description
Baud Rate	Speed of the Serial port. Available speeds are 1200, 2400, 4800, 9600, 19200 Bauds or disabled
Parity	The parity to apply (None / Even / Odd)
Databits	The number of bits in data (7 or 8)
Stop bit(s)	The number of Stop bits (1 or 2)
HW mode	Choose the Hardware mode of communication: <ul style="list-style-type: none"> • Ful Duplex HW handshaking (by default) • Full Duplex NO handshaking • Half duplex
Reply Timeout	Maximum time the eWON will wait for a valid message response

Table 112: HITACHI IOServer: COM parameters

The eWON implements Transmission Control Procedure 1 (One way activation Control Procedure).

When half-duplex mode is used (RS485), the eWON acts as master. So, no other master may be on the bus (eg: control panel or host).

5.14.1.1.2 Topic configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Destination Device Type and Address:	EH,5	'EH', ((ipaddress,('TCP' 'UDP), port))((station))[, LUMP]
Poll Rate	2000 MS	Default: 2000
Topic B :		<input type="checkbox"/> Enabled
Topic Name:	B	
Destination Device Type and Address:		'EH', ((ipaddress,('TCP' 'UDP), port))((station))[, LUMP]
Poll Rate	MS	Default: 2000
Topic C :		<input type="checkbox"/> Enabled
Topic Name:	C	
Destination Device Type and Address:		'EH', ((ipaddress,('TCP' 'UDP), port))((station))[, LUMP]
Poll Rate	MS	Default: 2000

Figure 105: HITACHI IOserver: Topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of Hitachi Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Device Address	See below for the Device Address Syntax. If an address is specified here, it will replace (overload) the address-defined Tag by Tag.
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

Table 113: HITACHI IOserver: Topic configuration item definition

5.14.2 Tag name convention

IO Server Name	HITACHI	
Topic Name	A	
	B	
	C	
Item Name	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 114: HITACHI IOserver - Tag name convention table

The Item Name can contain the PLC address where the value is polled or not. If an address is also specified at topic level, the address specified at Tag level will be ignored.

5.14.2.1 Value Name

The syntax is the following:

<Memory Type>[<Modifier>]<address>

Symbol	Memory type	Modifier allowed (optional)	Address
X	External Input Bit		Hrusbb H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) bb: bit offset (00 ..FF 2 digits hexadecimal)
WX	External Input Word	W, S	Hrusw H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
DX	External Input Double	D, L, F	Hrusw H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
Y	External Output Bit		Hrusbb H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1 digit hexadecimal) s: slot number (1 digit hexadecimal) bb: bit offset (00..FF: 2 digits hexadecimal)
WY	External Output Word	W, S	Hrusw H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
DY	External Output Double	D, L, F	Hrusw H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
R	Internal Output Bit dedicated		Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
WR	Internal Output Word dedicated	W, S	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
DR	Internal Output Word dedicated Double	D, L, F	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
M	Internal Bit Output Common		Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
WM	Internal Word Output Common	W, S	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
DM	Internal Word Output Common Double	D, L, F	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset

Table 115: HITACHI Memory types and address scheme

L	CPU Link Bit		Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
WL	CPU Link Word	W, S	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
DL	CPU Link Double	D, L, F	Hxxxxxx H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset

Table 115: HITACHI Memory types and address scheme

Note: The Modifier can be omitted, the modifier in bold will be used.

Symbol	Modifier	value range
W	Word	0 .. 65535
S	signed Word	-32768 .. 32767
D	DWord	0 .. 4294967296 (*)
L	signed DWord	-2147483648 .. 2147483647 (*)
F	Float	+/- 3.4e38

Table 116: HITACHI Modifiers

(*) Important: See "Tags are stored as Float" on page 67

Examples

address	point to
XH00103	selection of bit3 of word 0 of the input device located at remote:0 unit:0 slot:1
WYH0011	selection of word 0 of the output device located at remote:0 unit:0 slot 1
RH105	bit 105 hex (261 decimal) of the Internal Output Bit Dedicated area
WRSH10	short located at word 10 hex of the WR area
WMH10	word 10 hex of the Internal Word Output Common area
DMH10	double word 10 + 11 hex of the Internal Word Output Common area
WMH000010	word 10 hex of the Internal Word Output Common area (WMH10 is more optimal)

Table 117: HITACHI register address examples

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for the other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 118: Tag Status meaning

5.14.2.2 Global Device Address

The device address is either appended to the ValueName in the Item Name definition, or entered in the Topic global address fields.

The device address syntax is the following:

EH[,[[ipaddress,TCP|UDP,port]][station]][,LUMP]]

EH Serial	
EH,station	station : address of the PLC on the network <i>EH,4 the eWON will access PLC number 4.</i>
EH	By configuration, an HITACHI PLC could have an undefined station number. If this PLC is alone on a serial link, you don't need to specify a station number.
EH,station,LUMP	station : address of the PLC on the network LUMP : Link Unit Port Module <i>EH,4,FFFF0000 the eWON will access PLC number 4 with the LUMP FFFF0000.</i>
EH,LUMP	By configuration, an HITACHI PLC could have an undefined station number. If this PLC is alone on a serial link, you don't need to specify a station number. LUMP : Link Unit Port Module <i>EH,FFFF0000 the eWON will access PLC with the LUMP FFFF0000.</i>
EH ethernet	
EH,ipaddress,TCP UDP,port	ipaddress : IP address of the PLC TCP UDP : select the protocol used port : IP port used <i>EH,10.0.120.203,TCP,3004 the eWON will access the PLC at 10.0.120.203 with protocol TCP and port 3004</i>
EH,ipaddress,TCP UDP,port,LUMP	ipaddress : IP address of the PLC TCP UDP : select the protocol used port : IP port used LUMP : Link Unit Port Module <i>EH,10.0.120.203,TCP,3004,FFFF0000 the eWON will access the PLC at 10.0.120.203, protocol TCP, port 3004 and LUMP FFFF0000</i>

Table 119: HITACHI device address syntax

Important:

If the PLC address is defined at the Topic level, it can be omitted in the Tag definition. In that case the Tag name will only contain the "ValueName".

If the PLC address is specified at the Topic level, it will replace any address defined Tag by Tag.

5.15 MITSUBISHI FX IO Server

5.15.1 Introduction

This MITSUFX IOServer allows the eWON to poll tags belonging to a MITSUBISHI FX series PLC using its RS-422 base unit programming connector.

No remote maintenance functionality is provided by this IO server. The VCOM feature of the eWON has to be used to cover a remote maintenance.

MITSUFX IOServer is available in eWON with Firmware 5.5 and above.

5.15.2 Setup

5.15.2.1 COM configuration

IO Server: MITSUFX <input type="button" value="Edit"/> <input type="button" value="Clear"/> <input type="button" value="Init"/>	Global Config	13/10/2008 10:25:49
MITSUBISHI FX IO Server settings (eWON is acting as a MITSUBISHI FX IO master)		
COM Setup		
Baud Rate:	9600	Default: 9600
Parity:	Even	Default: EVEN
Databits:	7	Default: 7
Stop Bit(s):	1	Default: 1
HW Mode:	Full Duplex NO Handshaking	Default: Full Duplex
Reply Timeout:	<input type="text"/> MS	50..50000, default: 3000

Figure 106: MITSUFX IOServer: COM setup

Parameter	Description
Baud Rate	Speed of the Serial port. Available speeds are 9600 Bauds or disabled
Parity	The parity to apply (None / Even / Odd)
Databits	The number of bits in data (7 or 8)
Stop bit(s)	The number of Stop bits (1 or 2)
HW mode	Choose the Hardware mode of communication: <ul style="list-style-type: none"> • Ful Duplex HW handshaking • Full Duplex NO handshaking (by default) • Half duplex
Reply Timeout	The maximum time the eWON will wait for a valid message response

Table 120: MITSUFX IOServer: COM parameters

The switches of the eWON must be configured in RS485/RS422 mode.

5.15.2.2 Topic configuration

Topic A :		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Destination Device Type and Address:	FX0	'FX0' or 'FX0N' or 'FX' or 'FX2N' or 'FX3U'
Poll Rate	MS	Default: 2000
Topic B :		<input type="checkbox"/> Enabled
Topic Name:	B	
Destination Device Type and Address:		'FX0' or 'FX0N' or 'FX' or 'FX2N' or 'FX3U'
Poll Rate	MS	Default: 2000
Topic C :		<input type="checkbox"/> Enabled
Topic Name:	C	
Destination Device Type and Address:		'FX0' or 'FX0N' or 'FX' or 'FX2N' or 'FX3U'
Poll Rate	MS	Default: 2000

Figure 107: MITSUFIX IOserver: Topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of Mitsubishi Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Device Address	<p>Select the type of Mitsubishi PLC to link. Available FX type are:</p> <ul style="list-style-type: none"> • FX • FX0 • FX0N • FX2N • FX3U <p>There is no address (number) to add because the eWON is connected directly to one PLC by its programming port.</p> <p>If a device is specified here, it will replace (overload) the device-defined Tag by Tag.</p>
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

Table 121: MITSUFIX IOserver: Topic configuration item definition

5.15.3 Tag name convention

IO Server Name	MITSUFIX	
Topic Name	A	
	B	
	C	
Item Name	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 122: MITSUFIX IOserver - Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If the address is also specified at topic level, the address specified at Tag level will be ignored.

5.15.3.1 Value Name

The syntax is the following:

<Memory Type Symbol>[<Modifier>]<address>

Symbol	Memory type	Modifier allowed (optional)	Address
X	Input Bit (boolean)		1 to 3 OCTAL digits
Y	Output Bits (boolean)		1 to 3 OCTAL digits
M	Auxiliary relays (boolean)		1 to 4 decimal digits (max 7999)
M	Special Auxiliary relays (boolean)		1 to 4 decimal digits (min 8000)
S	States (boolean)		1 to 4 decimal digits
TC	Timer Contacts (boolean)		1 to 3 decimal digits
CC	Counter Contacts (boolean)		1 to 3 decimal digits
TR	Timer Reset (boolean)		1 to 3 decimal digits
CR	Counter Reset (boolean)		1 to 3 decimal digits
T	Timer Value	W , S	1 to 3 decimal digits
C	Counter Value	W , S	1 to 3 decimal digits (max 199)
C	High Speed Counter Value	L, D	1 to 3 decimal digits (min 200)
D	Data Registers	S , W, L, D, F	1 to 4 decimal digits (max 7999)
D	Special Data Registers	S , W, L, D, F	1 to 4 decimal digits (min 8000)

Table 123: MITSUFIX Memory types and address scheme

Note: The Modifier can be omitted, the modifier in bold will be used.

Symbol	Modifier	value range
W	Word	0 .. 65535
S	signed Word	-32768 .. 32767
D	DWord	0 .. 4294967296 (*)
L	signed DWord	-2147483648 .. 2147483647 (*)
F	Float	+/- 3.4e38

Table 124: MITSUFIX Modifiers

(*) Important: See "Tags are stored as Float" on page 67

Examples

address	point to
X14	input bit at octal address 14
D3	data register at address 3 (read as Signed Word)
DD3	data register at address 3 (read as DWord)
DF3	data register at address 3 (read as Float)
D8010	special data register at address 8010 (read as Signed Word)
C199	counter value at address 199 (read as Word)
C200	high speed counter at address 200 (read as DWord)

Table 125: MITSUFIX register address examples

• Status register:

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for the other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 126: Tag Status meaning

5.16 SNMP IO Server

5.16.1 Introduction

The SNMP IO server (Simple Network Management Protocol) is used to communicate with any SNMPv1 device on the network. It allows both read and write operations on 32-bit objects. It supports access to several different devices at the same time.

Only the following Object types are supported: INTEGER, 32bits COUNTER, GAUGE, UNSIGNED, TIMETICK.
There is no handling of MIB files.

SNMP IOServer is available in eWON with Firmware 5.6s2 and above.

5.16.2 Setup

IO Server: **SNMP** [Edit](#) [Clear](#) [Init](#) [Global Config](#) 12/03/2009 19:28:24

SNMP IO Server settings (This IO server communicates with any SNMP device)

Topic A : ☐ Enabled

Topic Name: A

Global Device Address: IP_Addr,Read_Community,Write_Community

Poll Rate: MS Default: 2000

Topic B : ☐ Enabled

Topic Name: B

Global Device Address: IP_Addr,Read_Community,Write_Community

Poll Rate: MS Default: 2000

Topic C : ☐ Enabled

Topic Name: C

Global Device Address: IP_Addr,Read_Community,Write_Community

Poll Rate: MS Default: 2000

[Update Config](#) [Cancel](#)

Figure 108: SNMP IOServer: setup

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of SNMP Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
Topic enabled	Enables or disables polling of all the Tags in the topic.
Global Device Address	<p>Select the target SNMP Server device. Syntax:</p> <ul style="list-style-type: none"> • IP_Addr,Read_Community,Write_community IP_Addr: IP address of the SNMP Server Read_Community: Community used for Reading Write_Community: Community used for Writing • IP_Addr,Community IP_Addr: IP address of the SNMP Server Community: Community used for Reading and Writing <p>If an address is specified here, it will replace (overload) the address-defined Tag by Tag.</p>
Poll rate	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

Table 127: SNMP IOServer: Topic configuration item definition

5.16.3 Tag name convention

IO Server Name	SNMP	
Topic Name	A	
	B	
	C	
Item Name	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 128: SNMP IOserver - Tag name convention table

The Item Name can contain the Device address where the value is polled, or not. If the address is also specified at topic level, the address specified at Tag level will be ignored.

5.16.3.1 Value Name

As the SNMP use an Abstract Syntax Notation (ASN), encode the full OID (Object ID) of the data you want to Read/Write.

You cannot import MIB files into the eWON.

Only INTEGER, 32bits COUNTER, GAUGE, UNSIGNED, TIMETICK object types are supported.

All these objects are Integer and could be truncated when eWON will store them as Float (See “Tags are stored as Float” on page 67).

Examples

address	point to
.1.3.6.1.2.1.4.3.0	read the .iso.org.dod.internet.mgmt.mib-2.ip.ipInReceives object
.1.3.6.1.2.1.4.3.0,10.0.0.55,public,private	read the .iso.org.dod.internet.mgmt.mib-2.ip.ipInReceives object at the IP 10.0.0.55 using community “public” for reading and the community “private” for writing.

Table 129: SNMP address examples

IMPORTANT:

The address of SCALAR objects ends with a 0 while the address of array items ends with their index in the array (starting from 1).

For example, to read *.iso.org.dod.internet.mgmt.mib-2.ip.ipInReceives* that have the address “.1.3.6.1.2.1.4.3”, you must add a “.0” at the end to obtain “.1.3.6.1.2.1.4.3.0”.

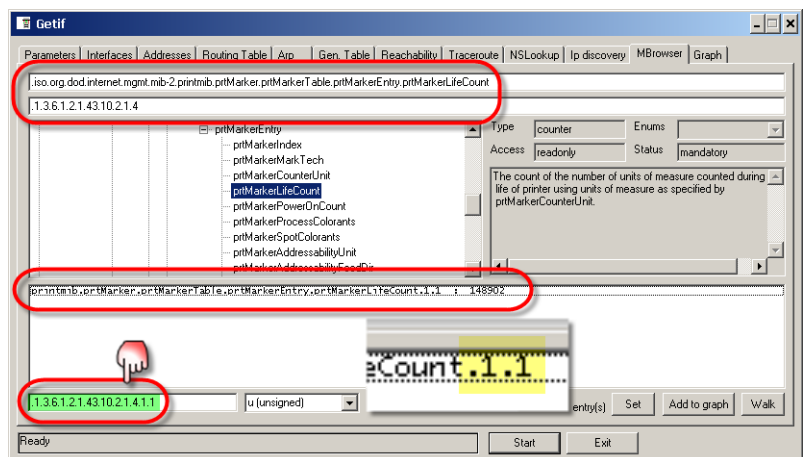
And to read *.iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifMtu* (“.1.3.6.1.2.1.2.2.1.4”) of the second interface, because this object is a table, you must add “.2” at the end to obtain “.1.3.6.1.2.1.2.2.1.4.2”.

NOTE: We recommend you to check the SNMP address with an SNMP Client (like Getif <http://www.wtcs.org/snmp4tpc/getif.htm>) to find the right address.

Example: Searching in the MIB file of a network printer to find the address of the “TotalNumberOfPagePrinted”, we found :

.iso.org.dod.internet.mgmt.mib-2.printmib.prtMarker.prtMarkerTable.prtMarkerEntry.prtMarkerLifeCount at address “.1.3.6.1.2.1.43.10.2.1.4”

Using the MIB file with Getif to retrieve the whole address of this Counter, we see that the Counter is in a 2 dimension table and we need to add “.1.1” to get its value.



• Status register:

The STATUS Tag is a special Tag that returns information about the current state of communication for a given device. As for the other Tags, the status Tag ValueName is composed of:

Status, Global Device Address

- You can define a status Tag for each Device used.
- If you use the status address, the Tag must be configured as analog.

0	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
1	Communication OK.
2	Communication NOT OK.

Table 130: Tag Status meaning

6 eWON Monitoring Web Interface

If you have configured the eWON with some Tag names, you can now come back to the eWON's Web Interface menu (**Main Menu**). The Web Interface menu of the eWON looks like this:

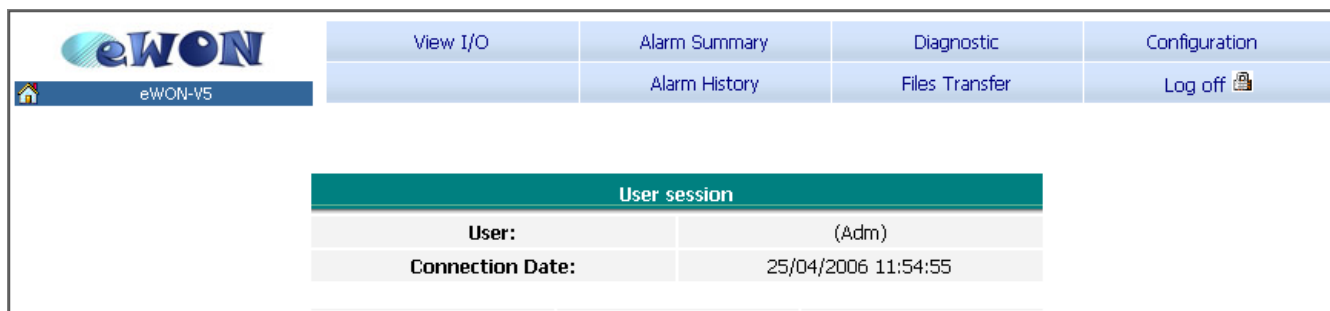


Figure 109: eWON Web Interface menu

The little home icon under the eWON logo can be accessed from any page of the eWON Scada and will always lead your browser directly to this main menu of the Web Interface.

You can always click on the eWON logo to obtain the definition and system information about the eWON you are connected to. A second navigator window will be opened giving you a summary of the main information about the current eWON:

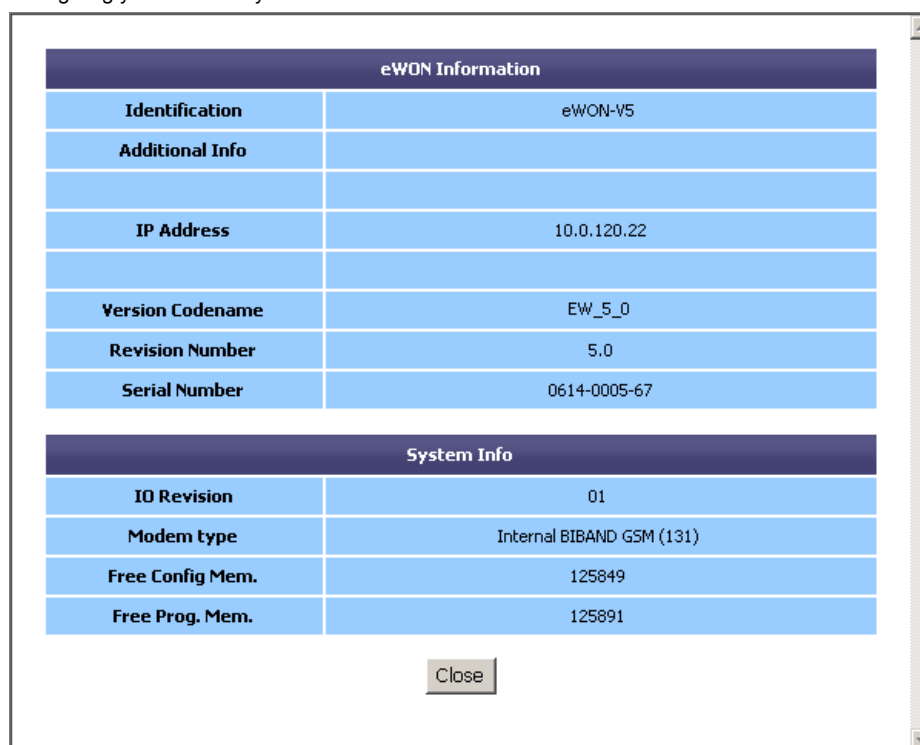


Figure 110: eWON information page

6.1 Real-time screen

Click on the **View IO** item from the eWON Web Interface menu to obtain the list of all eWON Tag names and associated real-time values. To refresh the value, click again on **View IO** item.

	Tag Name	Value	New Value		Description
<input type="checkbox"/>	Air_Valve	0	0	Update	Air valve to reduce tank internal pressure
<input type="checkbox"/>	Input_Faucet	1	1	Update	input of the Tank
<input type="checkbox"/>	Output_Faucet	0	0	Update	
<input type="checkbox"/>	Tank_Level	66	66	Update	Level of the Fuel Tank
<input type="checkbox"/>	Tank_Pressure	8	8	Update	Pressure of the Fuel Tank
<input type="checkbox"/>	Tank_Temperature	26	26	Update	Temperature of the Fuel Tank
	test	0	0	Update	
	wagoDI1	0			

Figure 111: eWON real time screen

6.1.1 Change a Tag value

As shown in the above example, in the first row from the Tag list, if the Tag name is an output and if the user has the right to 'force output', an edit box and an Update link are available. To change the value of the output just fill the related edit box with the new wanted value and click on the related Update link.

If the Tag is of Boolean type, a combo box with values 0 (zero) and 1 is then displayed.

6.1.2 Alarm state

If the Tag name is in alarm state, a yellow bell appears at its left side:

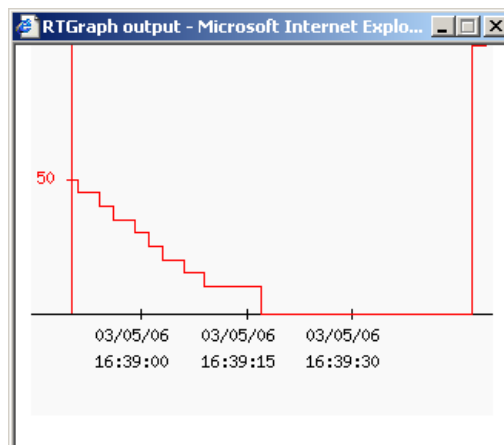
You can click on this picture to access directly the Alarm summary screen.

Tag description: The description of the Tag is also displayed for each Tag.

6.1.3 Real time graph

If a real time recording is enabled for a Tag, a small icon will appear next to its name:

This small icon is an hyperlink to show the graph picture. When the link is clicked, another window will open and after a small delay (about 3 seconds), a graph will be displayed:



This graph displays the whole real time window.

Important: If the main explorer window hides the real time window, clicking again on the real time graph hyperlink will not bring it forward. You should bring it forward manually.

6.1.4 Historical window

A check box may also appear in the first column of the View I/O screen meaning that you can choose this Tag to view its historical trend. It appears only if the historical logging has been enabled in the Tag description (see chapter "Tag Setup" on page 67).

6.2 Historical Trending screen

Warning: depending on the eWON's version - c.f. table at the end of this manual.

From the real time screen, users can select Tags (providing that the historical logging has been enabled for those Tags) by clicking on the related checkbox and request a graph for these Tags by clicking on the **Show Graph for selection** link above the real time tabs. Up to 4 Tags can be selected at the same time to be plotted on the graph.

	Tag Name	Value	New Value		Description
<input type="checkbox"/>	Air_Valve	0	0	Update	Air valve to reduce tank internal pressure
<input checked="" type="checkbox"/>	Input_Faucet	1	1	Update	input of the Tank
<input checked="" type="checkbox"/>	Output_Faucet	0	0	Update	
<input checked="" type="checkbox"/>	Tank_Level	60	60	Update	Level of the Fuel Tank
<input type="checkbox"/>	Tank_Pressure	8	8	Update	Pressure of the Fuel Tank
<input type="checkbox"/>	Tank_Temperature	26	26	Update	Temperature of the Fuel Tank
	test	0	0	Update	
	wagoDI1	0			

Figure 112: eWON historical trend configuration - 1

The user has then to select the correct time range for the Tag's selection and click on the **Update graph** link to obtain a historical trend. The common axis checkbox allows visualizing all the Tag names on the same axis. If the scales are different, it is clearer to display each curve with its own scale (by unchecking the **Common Axis** checkbox).

From: 03/05/2006 16:00:00 To: 03/05/2006 17:20:00 Common axis: ☐ Update graph

Select your time range for the selected variables

Figure 113: eWON historical trend configuration - 2



Figure 114: eWON historical trend graph

6.3 Historical table

The historical table is a representation of the IRCALL.BIN (incremental recording).

This representation provides recordings representation as a table where columns are Tag names and rows are recording times.

The features can be used at 2 levels:

- A page in the VIEW area.
- An export bloc descriptor exists (see “\$dtHT [Historical Table]” on page 173).

The Historical table is available through the *View I/O* page.

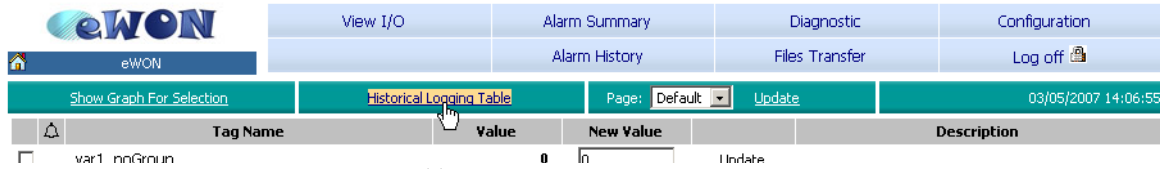


Figure 115: eWON Historical Table link

Use the *Historical Logging Table* link to access to the following page.



Figure 116: eWON Historical Table parameters

Like the “Historical Trending screen” on page 149, you need to specify the time range of the Historical Table with the *From* and *To* fields. These fields only accept date on the DD/MM/YYYY HH:MM:SS format. If the hour, minutes, seconds parameter are missing, they will be set to 0. You can filter the Tags shown by selecting the Instant Value Groups (combination of A,B,C,D groups).

If you want to display all the Tags (with historical logging) of the eWON, check the *Any* checkbox.

The *Include tags with HL disabled* checkbox allows you to include Tags with Historical logging currently disabled but having been previously recorded in the file.

The *Interval* parameter allow you to specify a fixed interval, in seconds, to generate the table (each row will be evenly distributed in time). The Tag value placed in the row is the latest logged value.

If the *Interval* is empty or set to 0, the output time is defined by the time in the recording file. You will have a row at each value changes (as shown in the figure below).



[Download as text file](#)

TimeStr	var1_noGroup	var2_GroupB	var3_GroupB	var4_GroupBC	var5_GroupD
03/05/2007 11:25:00	0.000000	0.000000	0.000000	0.000000	Undef
03/05/2007 11:27:51	1.000000	0.000000	0.000000	0.000000	Undef
03/05/2007 11:28:00	1.000000	2.000000	0.000000	0.000000	Undef
03/05/2007 11:28:03	1.000000	2.000000	2.000000	0.000000	Undef
03/05/2007 11:28:06	1.000000	2.000000	2.000000	3.000000	Undef
03/05/2007 11:28:10	4.000000	2.000000	2.000000	3.000000	Undef
03/05/2007 11:28:14	4.000000	2.000000	5.000000	3.000000	Undef
03/05/2007 11:28:18	4.000000	2.000000	5.000000	6.000000	Undef
03/05/2007 11:35:21	4.000000	2.000000	5.000000	6.000000	0.000000

Figure 117: eWON Historical Table

You can use the link *Download as text file* to export this table in csv format.

6.4 Real time Alarm screen

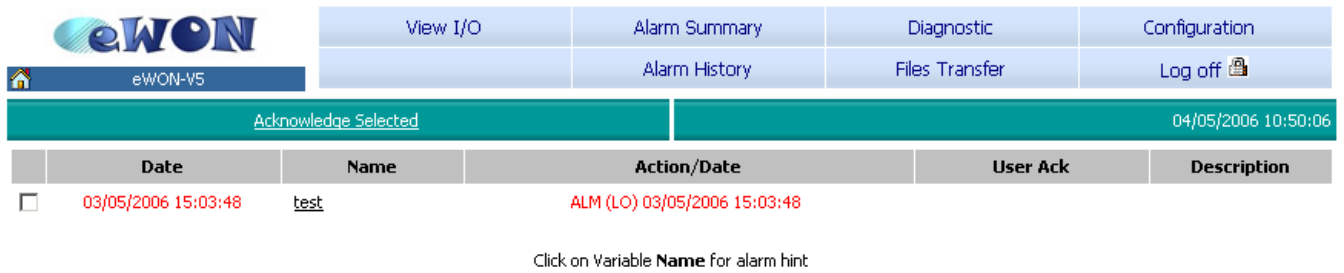


Figure 118: eWON real time alarm screen

The real time alarm page lists all the Tag names currently in alarm state.

- The 'Date' tab displays the eWON date and hour when the Tag was in alarm.
- The 'Name' tab displays the Tag in alarm.
- The 'Action/Date' tab displays the last status of the Tag and the date and hour of this state.
- The 'User Ack' tab displays the user who acknowledged the alarm.
- The 'Description' tab displays the description of the Tag in alarm.

There are several types of Alarm status:

ALM (HI)	ALARM status, the current value is in warning high position
ALM (HIHI)	ALARM status, the current value is in insecure high position
ALM (LO)	ALARM status, the current value is in warning low position
ALM (LOLO)	ALARM status, the current value is in insecure low position
ALM	ALARM status, the present value is out of defined threshold (Boolean Tag)
RTN	Return to Normal status, the present value is inside the defined threshold but has been out of threshold before and hasn't be acknowledged
ACK	Acknowledgment status, the present value is out of defined threshold but someone has acknowledged the alarm

Table 131: alarm status types

It is possible to define an alarm hint ("Tag main edit window" on page 70):

Alarm Hint	
Variable Name	test
Description	
Alarm Hint	Test tag is in alarm

Close

Figure 119: eWON alarm notification: pre-defined hint

This alarm hint can be useful to help the users that are allowed to take actions regarding the alarms.

6.5 Historical Alarm screen

The historical alarm screen is used to find the alarms generated in the past and know who acknowledged a specified alarm. All the alarms are stacked from the top to the bottom.

The given information is:

- The date and the hour of the event.
- The Tag name.
- The type of the event: ALM, RTN, ACK or END (RTN and ACK).
- The user who acknowledged the alarm.
- The description of the Tag.







		View I/O	Alarm Summary	Diagnostic	Configuration
 eWON-V5			Alarm History	Files Transfer	Log off 
<< Previous Page		Next Page >>			05/05/2006 14:09:07
Date	Name	Status	Type	User Ack	Description
05/05/2006 10:38:51	test	END		 Adm	
05/05/2006 10:38:47	test	RTN			
05/05/2006 10:34:50	test	ALM	LO		
04/05/2006 11:20:06	test	ALM	HI		
04/05/2006 11:19:54	test	END		 Adm	
04/05/2006 11:19:04	test	ACK	LO	 Adm	
03/05/2006 15:03:48	test	ALM	LO		
03/05/2006 13:32:18	test	ALM	LO		

Figure 120: eWON alarm history page

The **Previous Page** link is used to go back to the past and the **Next page** link is used to go to the present. When no more alarm is available for display, the following message appears: "No more history page".

6.6 Files transfer

This link gives you access to a page where the eWON files are listed:



File Name	Description
Events.htm	Events log as table
sstat.htm	Scheduled status as table
estat.htm	System status as table
rt_alm.bt	Real time alarms
inst_val.bt	Instantaneous values as text
inst_val.bin	Instantaneous values (binary)
events.bt	Events log
hst_alm.bt	Alarms history
var_lst.bt	Variables list and details
var_lst.csv	Variables list and details
program.bas	Program
ewonfwr.edf	Firmware
dump.ppp	PPP Dump
config.bin	Binary config
config.bt	Text config
comcfg.bt	Text COM config
ircall.bin	All historical logs
backup.tar	TAR Backup/Restore + erase
irc_Tank_Level.bt	Tank_Level Historical log
irc_Input_Faucet.bt	Input_Faucet Historical log
irc_Output_Faucet.bt	Output_Faucet Historical log
irc_Tank_Temperature.bt	Tank_Temperature Historical log
irc_Tank_Pressure.bt	Tank_Pressure Historical log
irc_Air_Valve.bt	Air_Valve Historical log
irc_wagoDI1.bt	wagoDI1 Historical log
irc_test.bt	test Historical log

Select the file you want to download.
REM: you can right click on a file and select "save target as..." to save the file on your disk.

Figure 121: files transfer page

6.7 Diagnostic

If you encounter problems with your eWON, you will find a lot of information in the diagnostic area of the eWON.



Figure 122: Diagnostic page (without ADSL)

The diagnostic area is divided in four or five zones :

- Event Log
- Status
- Scheduled Actions
- Real Time Log
- ADSL Log (on eWON with ADSL modem)



Figure 123: Diagnostic page (with ADSL)

6.7.1 Event Log

The Event Log page shows you the information recorded in the Events.txt file.

In this page, the logged data are presented in reverse chronological order (recent events on the top, older ones at the bottom) on page containing a fixed number of events. These events are displayed in different colors to differentiate **Error**, **Warning** and **Trace** events.

Navigate →

Warning →

Trace →

Error →

Time	Event	Description	Originator	Help
08/05/2006 11:27:39	-26803	stdios-Tag disabled (5738:400 - Nb Tag: 1)	main	
08/05/2006 11:27:39	1073773142	s7mpi-MPI enters online inring state	s74srv	
08/05/2006 11:27:39	-26803	stdios-Tag disabled (5738:400 - Nb Tag: 1)	s74srv	
08/05/2006 11:27:38	1073762140	Reboot reason: Unknown (power loss,...)	wd	
08/05/2006 11:27:38	-22602	System Booting, FWR: EW_5_0b41 (5.0), SN: 0614-0005-67 [EF0000]	elog	
08/05/2006 11:24:26	1073763129	eftp-Open FTP session (User: Adm)	ftps	
08/05/2006 11:23:57	1073763130	eftp-Close FTP session (User: adm)	ftps	
08/05/2006 11:23:22	28604	secu-The file the user is trying to write is unknown	ftps	
08/05/2006 11:23:22	28604	secu-The file the user is trying to write is unknown	ftps	
08/05/2006 11:21:54	1073763129	eftp-Open FTP session (User: Adm)	ftps	
08/05/2006 11:21:19	1073763130	eftp-Close FTP session (User: adm)	ftps	
08/05/2006 11:21:17	1073763129	eftp-Open FTP session (User: Adm)	ftps	
08/05/2006 11:21:15	28600	secu-Invalid user (anonymous)	ftps	
08/05/2006 11:12:51	7551	gio-Invalid IO name for Tag	http	
08/05/2006 11:12:51	31400	S74srv-Invalid address in decode	http	
08/05/2006 11:12:13	7551	gio-Invalid IO name for Tag	http	
08/05/2006 11:11:46	1073773142	s7mpi-MPI enters online inring state	s74srv	
08/05/2006 11:11:45	31211	mpi-cannot get current mpi state	s74srv	
08/05/2006 11:11:45	31212	mpi-cannot get current mpi low level counters	s74srv	
08/05/2006 11:00:25	1073762140	Reboot reason: Unknown (power loss,...)	wd	

← Previous Page Next Page →

Figure 124: Event Log page

You can customize the information displayed on this page by using the Event Class, Reporting Level and Per Page entry fields.

Time	Description	Originator	Help
08/05/2006 11:27:39	os-Tag disabled (5738:400 - Nb Tag: 1)	main	
08/05/2006 11:27:39	pi-MPI enters online inring state	s74srv	
08/05/2006 11:27:39	os-Tag disabled (5738:400 - Nb Tag: 1)	s74srv	
08/05/2006 11:27:38	boot reason: Unknown (power loss,...)	wd	

Figure 125: Customize the Event Log page

Event Class	Allows you to filter the events displayed by categories (or ALL)
Reporting Level	Allows you to filter the events displayed by severity. You view the level choosed and the levels greater. If you select Warning, you will see the warning and Error events.
Per Page	Defines the number of events you wants to see in each pages.

Table 132: Event Log page parameters

Choose the events that you want to see and validate with the [Update](#) link.

6.7.2 Status

With the Status page, you can access all the internal variables, counters representing the current live status of your eWON. These counters are organized in three main categories: *System Counters*, *I/O Servers counters* and *System Info*.

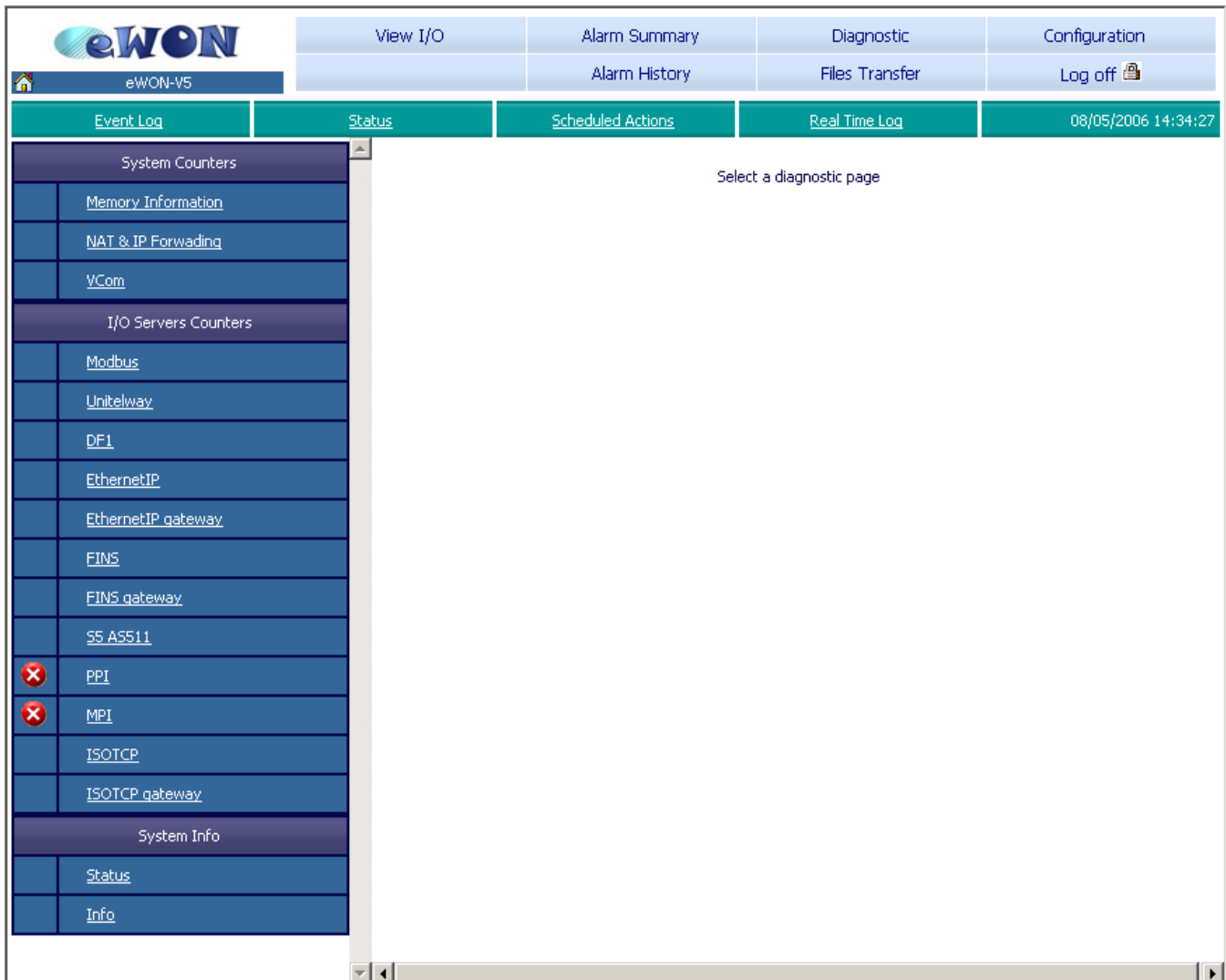


Figure 126: Status select page

In the first column, you can see an or icon representing the Error or Warning level of this category.

Click on the category link to view different counters/info.

All these counters are accessible from outside of the eWON by FTP in the *estat.htm* file.

6.7.2.1 Memory Information

Memory Information				
Description	Value	Unit	Stat	?
Total memory allocated	2235480	Bytes		
<u>Number of Free Chunks</u>	10			
<u>Number of free blocks in fast bin</u>	0			
Maximum allocated space	2235616	Bytes		
<u>Fast bin block size used</u>	0	Bytes		
<u>Total Alloc Space</u>	2223984	Bytes		
<u>Total Free Space</u>	11632	Bytes		
<u>Memory that could be trimmed</u>	4056	Bytes		
Total Memory Available	11534336	Bytes		
<u>Tcp Ip allocated memory</u>	152576	Bytes		
Sockets allocated	11			
<u>Snmp allocated memory</u>	22240	Bytes		
<u>Config free memory</u>	254913	Bytes		
<u>Script free memory</u>	126959	Bytes		
<u>/usr partition free space</u>	5449728	Bytes		
<u>/usr partition total size</u>	5468160	Bytes		

Figure 127: Memory Information page

6.7.2.2 NAT & IP Forwarding

NAT & IP Forwarding				
Description	Value	Unit	Stat	?
Minimum number of available config nodes	0			
Minimum number of available NAT nodes	0			
Number NAT entry missed	0			
Service node recycled	0			
Port forward node recycled	0			
Number of incoming packets dropped (reason other)	0			
Number of outgoing packets dropped (reason other)	0			
Number of incoming packets dropped (invalid packet)	0			
Number of incoming packets dropped (Filtered)	0			
Number of incoming packets dropped (invalid destination)	0			
Number of packets forwarded	0			
Number of outgoing packets dropped (invalid packet)	0			
Number of NATed packets	0			
Number of NATed TCP packets	0			
Number of NATed UDP packets	0			
Number of NATed ICMP packets	0			

Figure 128: NAT & IP Forwarding page

6.7.2.3 VCom

VCom				
Description	Value	Unit	Stat	?
<u>VCOM1: COM Port Opened</u>	No			
<u>VCOM1: COM Port Error</u>	No			
<u>VCOM1: TCP Port Error</u>	No			
<u>VCOM1: Serial Bytes In</u>	0			
<u>VCOM1: Serial Bytes Out</u>	0			
<u>VCOM2: COM Port Opened</u>	No			
<u>VCOM2: COM Port Error</u>	No			
<u>VCOM2: TCP Port Error</u>	No			
<u>VCOM2: Serial Bytes In</u>	0			
<u>VCOM2: Serial Bytes Out</u>	0			

Figure 129: VCom page

6.7.2.4 Status

Status				
Description	Value	Unit	Stat	?
<u>PPP allocated IP address</u>	0.0.0.0			
<u>Current IP transparent forward address</u>	0.0.0.0			
<u>VPN allocated IP address</u>	0.0.0.0			
<u>PPP accumulated incoming traffic</u>	0	Bytes		
<u>PPP accumulated outgoing traffic</u>	0	Bytes		
<u>ADSL Line status</u>	Online			
<u>ADSL WAN status</u>	Up			
<u>ADSL Local IP</u>	80.201.80.107			
<u>ADSL Remote IP</u>	80.201.80.1			
<u>ADSL Primary DNS</u>	195.238.2.22			
<u>ADSL Secondary DNS</u>	195.238.2.21			

Figure 130: Status page




6.7.2.5 Info

Info				
Description	Value	Unit	Stat	?
<u>Serial number</u>	0835-0004-54			
<u>Firmware version</u>	327684			
<u>Code name</u>	EW_5_4s5			
<u>Firmware download date</u>	29/04/2002 15:00:00			
<u>CPU ID</u>	00000000			
<u>System Enabled</u>	1			
<u>Hardware Revision</u>	000000D0			
<u>Hard Extended Revision</u>	00000010			
<u>Hardware options</u>	119			
<u>Modem type</u>	23			
<u>MAC address</u>	00:03:27:40:30:0f			
<u>MAC address WAN</u>	00:03:27:00:30:0f			
<u>Modem extended information</u>	[115kb] PRODUCT: WAVECOM MODEM MULTIBAND 900E 1800 , ROM: 663_09gg.Q2686H 1955080 080207 16:01			
<u>Features</u>	EF0000			
<u>Boot loader revision</u>	00030007			
<u>ADSL Version info</u>	SW Ver:VUL-2.5.060823p, FW Ver:E37.5.49			
<u>ADSL Serial number</u>	456789abcdx			

Figure 131: Info page

6.7.3 Scheduled Actions

The Scheduled Actions diagnostic page shows you the states of the outgoing actions like SendMail, putFTP, getFTP, NTPSynchro, SNMPTrap.

		View I/O	Alarm Summary	Diagnostic	Configuration
 eWON-V5			Alarm History	Files Transfer	Log off 
Event Log	Status	Scheduled Actions	Real Time Log	09/05/2006 10:59:26	
Scheduled actions Update					
Action Id	Action Type	Status Code	Status As Text	Start	End
3	Send Mail	-1	In Progress	09/05/2006 10:59:24	01/01/1970 00:00:00
2	NTP Synchro	0	Success	09/05/2006 10:23:24	09/05/2006 10:21:56
1	NTP Synchro	22105	cannot read from server	09/05/2006 10:17:53	09/05/2006 10:20:58
0	Send Mail	0	Success	09/05/2006 10:17:38	09/05/2006 10:19:59

In case of action failure check [Event Log](#) for diagnosis

Figure 132: Scheduled Actions page

The Status code can take the following values:

Status code values	
0	Ended with Success
-1	In Progress
>0	Ended with Error. The value is the Error code. See <i>Status As Text</i> column for explanation.

The eWON maintains a list with the status of the last 20 scheduled actions executed.
You can find the same information in the sstat.htm file.

To refresh this page, use the [Update](#) link.

6.7.4 Real Time Log

The Real Time Log diagnostic page shows you the *Debug* information from **VCom**, **Energy**, **Serial** and **VPN**.

This logging is a time consuming eWON task and is not activated by default. It will slow down the overall behavior of the eWON. Use it only during your debugging process !




		View I/O	Alarm Summary	Diagnostic	Configuration
 eWON-V5			Alarm History	Files Transfer	Log off 
Event Log	Status	Scheduled Actions	Real Time Log	09/05/2006 11:21:59	
Real time log Source: All sources Per Page: 30 Update					
<< Previous Page Next Page >>					
Time	Source	Event	Clock	Id	
09/05/2006 11:22:47	VCom	VCOM(0), err, Client doesn't support Telnet COM Port Protocol Option (RFC 2217), trying to serve anyway.	5351900	7	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Suppressing Go Ahead characters (WILL).	5351900	6	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Suppressing Go Ahead characters (DO).	5351900	5	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Rejecting Telnet Echo Option (DO).	5351900	4	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Telnet Binary Transfer Enabled (WILL).	5351895	3	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Telnet Binary Transfer Enabled (DO).	5351895	2	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Port opened	5351885	1	
09/05/2006 11:22:47	VCom	VCOM(0), trc, Client connected	5351880	0	
<< Previous Page Next Page >>					

Figure 133: Real Time Log page

You can select the source of the data to display and the number of events per page with the configuration fields.

Real time log		Source: <input type="text" value="All sources"/>	Per Page: <input type="text" value="30"/>	Update
<< Previous Page		Next Page >>		
Time	Source	Event		
09/05/2006 11:30:36	VCom	VCOM(0), trc, Client disconnected		
09/05/2006 11:30:36	VCom	VCOM(0), trc, Port closed		

Figure 134: Real Time Log parameters

These information are stored in RAM memory, they are cleared by an eWON reboot.

6.7.4.1 Activate VCOM debug mode












		Tag Setup		System Setup		IO Server Config		Main Menu	
 eWON-V5		Script Setup		Users Setup		Pages List			
General		Communication		Storage		09/05/2006 14:24:49			
 Main settings		COM Port: IO Port (COM:1) Edit		09/05/2006 14:24:54					
 General									
 Net services									
 VCOM									
 SMTP (mails)									
 NTP (time)									
 FTP									
 SNMP									
 Diagnosis									
COM1 Virtual port configuration									
General									
Port Type:		Telnet RFC 2217				Disable if not used to avoid port conflict.			
TCP Port:		23				Default to 23 (telnet).			
Poll signal interval		100				Check Modem line interval. Default to 100 MSec.			
Debug		<input checked="" type="checkbox"/>				Warning: will slow down system.			
Access Management									
Always accept new client		<input checked="" type="checkbox"/>				If a new client connects, the previous client connection is closed.			

Figure 135: Activate VCOM debug

6.7.4.2 Activate Energy debug mode

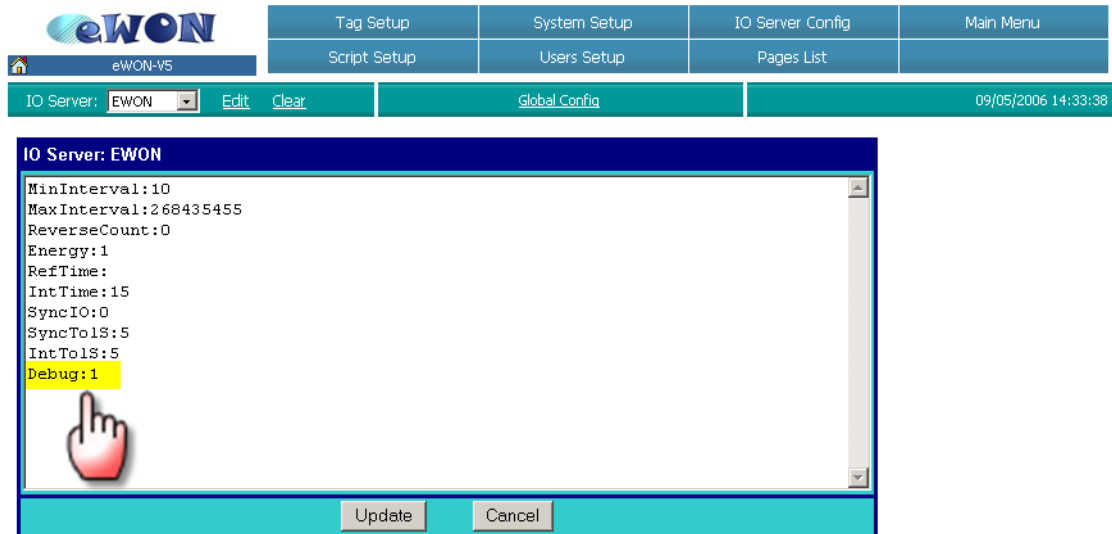


Figure 136: Activate Energy debug

6.7.4.3 Activate Serial debug mode

You can activate the debug mode on every serial port of the eWON (COM port(s) and Modem).

Syntax is **SerDebX:Y** X is the Serial port number and Y is the debug mode.

eWON type	Serial port number (X)
eWON4002	1 : Serial port 1 2 : Modem 3 : Serial port 2 4 : Serial port 3
eWON MPI	1 : Modem
Other eWONs	1 : Serial port 1 2 : Modem

Table 133: Serial Debug : Serial port available

Debug mode value (Y)	Description
0	No debug
1	Hex values Tx & Rx
2	Hex and Ascii values Tx & Rx
3	Hex and Ascii values Tx & Rx but Rx timeouts are not logged (clearer in log) (usefull for Modem debugging)

Table 134: Serial Debug : mode values

To enable the Serial debug mode on Serial port 1, you need to send by FTP a "config.txt" file containing only:

```
:
: System
SerDeb1:1
```

Or you can use a little Script Basic:

```
Setsys SYS,"load"
Setsys SYS,"SerDeb1",1
Setsys SYS,"save"
cfgsave : REM      to debug also after reboot
```

As the Serial Debug uses eWON resources (CPU and memory), don't forget to disable the debugging once you don't need it anymore. Set the SerDebX to 0 (null) to disable it.

The buffer used to store data in the real time log is limited to 1000 characters, so if an RX or TX data stream is longer than 450 characters, an error message saying that it is not possible to log it is logged instead

Example: SER-Rx: Too long to print (800)

If the Debug mode is >1 then the ascii values are only logged if there is space, so even if ascii debug is asked, if there is no space, no ascii data are appended to the hex data.

6.7.4.4 Activate VPN debug mode

eWON-V5			
Tag Setup	System Setup	IO Server Config	Main Menu
Script Setup	Users Setup	Pages List	
General		Communication	Storage
09/05/2006 16:51:34			
VPN Connection configuration Advanced options			
Diagnosis level	High	Diagnosis goes to 'Real time log'	
Port In	None		
Port Out	Medium		
'keep alive' interval	120	0 = disable Keep alive.	
Update			

Figure 137: Activate VPN debug

The VPN diagnosis can be set to 3 levels or disabled.

6.7.5 ADSL Log

If your ADSL does not work, you may have problems with your configuration. In that case, you can check the ADSL Log, this log is fetched from the modem itself and remains in 'English'. It may contain information about an invalid VPI/VCI configuration or an incorrect username and password.

Event Log	Status	Scheduled Actions	Real Time Log	ADSL Log	04/09/2008 15:27:32
<pre> Thu Sep 04 15:22:27 2008 : STATUS ALARM : ETHER Interface Up : Interface - eth-0 Thu Sep 04 15:22:25 2008 : STATUS ALARM : PPP Interface Up : Interface - ppp-0 Thu Sep 04 15:22:25 2008 : STATUS ALARM: PPP Authorization Successful : Interface - ppp-0 Thu Sep 04 15:22:24 2008 : STATUS ALARM : PPPoE Up : Interface - ppp-0 Thu Sep 04 15:22:17 2008 : MAJOR ALARM : ETHER Interface Down : Interface - eth-0 Thu Sep 04 15:22:00 2008 : STATUS ALARM : ETHER Interface Up : Interface - eth-0 Thu Sep 04 15:21:50 2008 : MAJOR ALARM : ETHER Interface Down : Interface - eth-0 Thu Sep 04 15:21:48 2008 : STATUS ALARM : ETHER Interface Up : Interface - eth-0 Thu Sep 04 15:21:31 2008 : STATUS ALARM : ATM VC Up : Interface - aal5-1, PortId=7, Vpi=8, Vci=35 Thu Sep 04 15:21:31 2008 : STATUS ALARM : ATM Interface Up : Interface - atm-0 Thu Sep 04 15:21:31 2008 : STATUS ALARM : DSL Interface Up Thu Sep 04 15:21:28 2008 : MAJOR ALARM : ETHER Interface Down : Interface - eth-0 Thu Sep 04 15:21:26 2008 : STATUS ALARM : ETHER Interface Up : Interface - eth-0 Thu Sep 04 15:21:06 2008 : MAJOR ALARM : ETHER Interface Down : Interface - eth-0 Thu Sep 04 15:21:04 2008 : STATUS ALARM : ETHER Interface Up : Interface - eth-0 Thu Sep 04 15:20:45 2008 : STATUS ALARM : Bimap Nat Rule Created : Rule Id - 2 : Interface - All Thu Sep 04 15:20:45 2008 : STATUS ALARM : IP Interface Created : Interface - ppp-0 Thu Sep 04 15:20:45 2008 : STATUS ALARM : Non IP Interface Created : Interface - aal5-1 </pre>					
Refresh					

7 Retrieving Data from eWON

7.1 List of eWON files

The eWON flash file system contains the following files (R: read, W: write). Detailed information about files format are contained in the Technical Notes that you can download from the eWON web site (**Support/Documentation/Technical notes** on <http://support.ewon.biz>):

- TN02: eWON files format
- TN03: ircAll.bin format
- TN12: var_lst.txt format

File Name	Type	Description
Events.htm	R	eWON events occurred (as log in, log out, error) - html format
sstat.htm	R	All the scheduled actions status for the current session - html format
estat.htm	R	Current status of the eWON - html format
rt_alm.txt	R	Real time alarms list
inst_val.txt	R/W	Contains the instant values from the Tags that have been defined in eWON - text format
inst_val.bin	R/W	Instant values from eWON's Tags - binary format
events.txt	R	eWON events occurred (as log in, log out, error) - text format
hst_alm.txt	R	Historical alarms list - text format
var_lst.txt	R/W	List of all the eWON Tag names which are logged - text format
var_lst.csv	R/W	List of all the eWON Tag names which are logged (csv format)
program.bas	R/W	The whole source code of eWON basic program
ewonfwr.edf	W	eWON's firmware file
dump.ppp	R	ppp dump file (can be analyzed by using a software that manages the .ppp format)
config.bin	R/W	eWON configuration - binary format
config.txt	R	eWON configuration - text format
comcfg.txt	R	eWON COM configuration - text format
ircall.bin	R	All the binary values from all Tags that have been defined in eWON
icr_XXXXX.txt	R	Incremental recording file. One file per each of the Tags that are listed inside the var_lst.txt file
remote.bas	W	Single shot execution section (max size = 3000 bytes)
backup.tar	R/W	Archive containing all necessary files to backup the eWON. config.txt, comcfg.txt, program.bas and /usr directory (with subdirs). When the archive is written, the eWON is <i>firstly cleared</i> before applying the all files.
data.tar	R/W	Archive containing all necessary files to backup the eWON. config.txt, comcfg.txt, program.bas and /usr directory (with subdirs). When the archive is written, the eWON is <i>not cleared</i> before applying the all files.

Table 135: eWON files list

- Files *ewonfwr.edf* and *config.bin* are binary files and cannot be modify by users. The *config.bin* file is Read/Write to allow users to "copy/paste" configuration from one eWON to another.
- The *program.bas* file is Read/Write; this allows you to design your program offline with your text editor and to upload it to the eWON.
- Remote.bas is not readable. When a remote.bas (max size = 3000 bytes) file is "dropped" in the eWON root directory, this program is executed 1 time. This feature can be used to execute a single shot action in an automated way.

- The following files only appear if the user owns the "Config rights":
 - Program.bas
 - ewonfwr.edf
 - config.bin
 - config.txt
- During an FTP session, all the files are read-only, except for users who own the "Config rights".

7.2 Files Format

Files format are text semicolon (;) separated files that may be inserted inside a program such as Excel™. The first row gives the columns names, and the next ones the values of the different columns.

For example, the content of the *rt_alm.txt* file:

```
"TagId";"AlarmTime";"TagName";"AlStatus";"AlType";"StatusTime";"UserAck";"Description"
1;"7/09/04 13:19:12";"Level tank A";"ALM";"LOW";"7/09/04 13:19:12";"";"Fuel level on Tank A"
```

7.2.1 Config.txt : New Line character (NLSeparator)

Firmware 5 specific feature

For technical purposes, the character used (LF char 0x0A) to separate parameters in some fields is replaced by a ¶.

Fields where ¶ character could be found in config.txt are: IOServerData#, Information of eWON, Description of Tag.

Fields where ¶ character could be found in comcfg.txt are: VPNSecretKey, VPNSecretCert, VPNCACert

With firmware 5, you will find the following parameter:

```
IOSrvData0:MinInterval:10¶MaxInterval:268435455¶ReverseCount:0
```

¶ has the ASCII code 182 (0xB6)

The end of the line is always CR+LF (0x0D 0x0A).

With firmware 4, you will find the following parameters:

```
IOSrvData0:MinInterval:10      ended by a LF character 0x0A
MaxInterval:268435455         ended by a LF character 0x0A
ReverseCount:0                ended by a CR+LF characters 0x0D 0x0A
```

In firmware 5, you can force the use of 'LF' or '¶' with the **NLSeparator** parameter (in config.txt file).

NLSeparator	0 (default) : use the '¶' (0xB6) as separator in IOServerData# field. 1 : use the 'LF' (0x0A) as separator in IOServerData# field (for compatibility with firmware 4).
--------------------	---

note: If the config is cleared or if the eWON is formatted, the NLSeparator returns to 0.

note: When you put a config.txt file by FTP to an eWON with firmware 5, it handles correctly the 2 kinds of separator.

7.3 FTP transfer

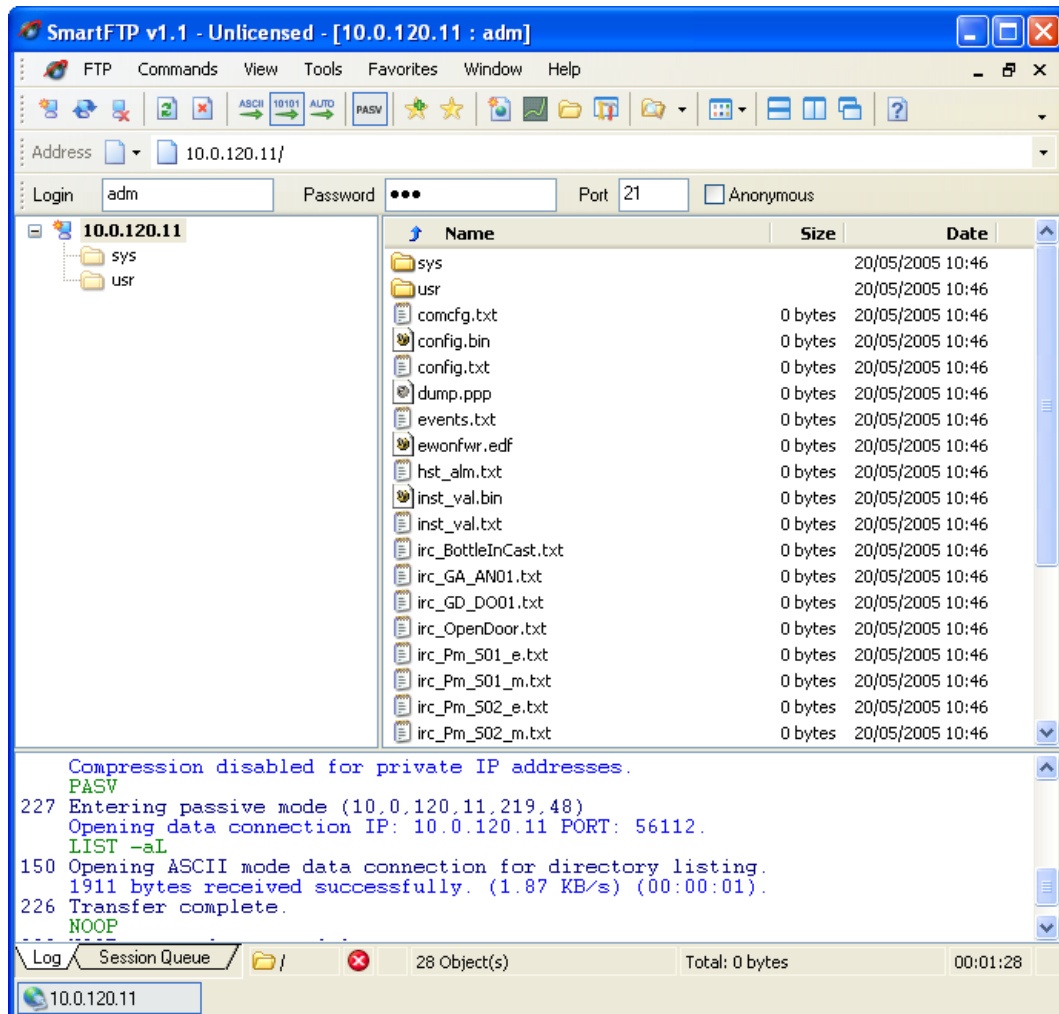
FTP stands for the classical File Transfer Protocol used on the Internet.

7.3.1 FTP Software tools

A lot of FTP software tools are available on the market. A very professional freeware FTP software called **SMART FTP** is available on the eWON web site for download <http://www.ewon.biz/> (/Support/Resource Links). This tool allows you to easily manage file retrieving by drag and drop. Please refer to this product's user manual in order to connect to the eWON.

The settings needed to open a TCP/IP connection to the eWON are (with factory settings)

IP address	10.0.0.53
Login	adm
Password	adm
Port	21 (default FTP port)
Anonymous unchecked (you are connecting with the above login and password)	



7.3.2 FTP session

Using a common FTP session and using all standard FTP command, you can also easily retrieve data from the eWON. The main interest of this method is to automate the upload by an FTP scripting executed automatically.

7.3.3 Via eWON web site

One of the Web pages available within the eWON Web Interface is called *Files Transfer*. This page contains a table with a list of hyperlinks. The Hyperlinks can be used to download files directly from the eWON Web Interface.

8 Export Block Descriptor

Exports are used to export eWON data.

Export block can be used in the following situations:

- **Attach the eWON data to an email**
- **Include eWON data into an eMail content**
- **Make an FTP PUT of eWON data from the eWON to a FTP server**
- **Make an FTP GET from a FTP client out of the eWON FTP server**
- **Include data in an eWON HTML custom page.**
- **Access data in Basic with OPEN “exp:.....”**

In all these cases, an Export Block Descriptor will be used to describe the data to export.

8.1 Export block descriptor

An Export Block Descriptor is a string of characters describing the eWON data to export with a precise syntax.

Typically, the Export Block Descriptor will answer the following questions:

- **What eWON data to export (Event log, Historical logging, etc.)?**
- **How to format the data to export (Binary, Text, Html table, Graphic)?**
- **From what time?**
- **To what time?**
- **What Tag is concerned?**
- **...?**

This list is NOT complete, and this information is not required for each type of data to export, but it gives an idea of what is described in an Export block descriptor.

Example of Export blocks descriptor:

```
$dtHL $ftT $st_m10 $et_0 $tnMyTag $fnData.csv
```

The export syntax is composed of a sequence of fields followed by its value. A field is a 3 characters identifier starting with \$ and followed by 2 lower cap letters (case sensitive).

- **The first letter of the parameter value follows immediately the second letter of the field.**
- **The parameter is considered up to the first space found or until a \$ or a [is detected.**
- **The parameter can also be placed between quotes ("). In that case the parameter value is the value between the quotes.**

The following fields are defined:

Fields	Description
\$dt	Data type
\$ft	Export format
\$st	Start time
\$et	End time
\$tn	Tag name
\$ut	Update last time
\$ct	Compression type
\$fl	Group filter
\$fn	File name

Table 136: Export Block Descriptor fields description

8.2 Export fields syntax definition

The syntax for the different fields is defined in the following chapters.

8.2.1 \$dt [Data Type]

The \$dt field defines what data to export from the eWON. The \$dt parameter is made up of 2 upper case letters (case sensitive) that can take one of the following values:

\$dt Parameter	Description	Binary	Graph	Text	Html
AH	Alarm history			T*	H
AR	Alarm Real time			T*	H
CF	Config	B*			
ES	estat file			T	H
EV	Event file			T*	H
FW	Firmware	B*			
HL	Historical Logging	B*	G	T	H
HT	Historical Table			T*	H
IV	Instant values	B*		T	
PG	Program			T*	
PP	PPP dump file	B			
RL	Real time logging	B*	G	T	H
SC	Communications configuration file			T	H
SE	Script Expression	B*		T	H
SS	Scheduled status			T*	H
SV	System Variable			T	
TL	Tag list			T*	H
UF	User file	B*		T	H
RE	Real Time diagnostic			T*	
TR	TAR File	B*			

Table 137: \$dt parameters description

(*) The asterisk in the previous table denotes the default value of the \$ft (export format). For example, for the DataType HL (Historical Logging), the default export format will be B (Binary) if you do not specify a \$ft in your Export Bloc Descriptor (using [\$dtHL] is equivalent to [\$dtHL \$ftB]).

8.2.2 \$ft [Format]

The \$ft field defines how to format the data exported. The following formats are available:

\$ft Parameter	Format description
B	Binary
G	Graph
T	Text
H	HTML Table

Table 138: \$ft parameters description

- **Binary:** the data are sent in a raw binary format, not modified by the export module.
- **Graph:** the data are used to produce a PNG (Portable Network Graphic) image representing a graph of the values (historical trend or real time graph).
- **Text:** The data are formatted as a CSV file, this means that each record is represented with each field on a line separated by a semicolon (;). The string fields are written between quotes, each line is ending by a CRLF (0x0D, 0x0A) sequence.
- **Html:** Instead of the text format, the data are placed in a simple HTML table. This format is useful for inserting data in the user custom HTML pages.

8.2.3 \$st [Start Time] and \$et [End Time]

These 2 fields are used to limit the time range of an export operation. \$st and \$et provide the start and end time of the export. The parameter format is the same for both fields. There are 3 different formats for the \$st, \$et parameter:

- Relative time
- Absolute time
- From last \$ut (see also “\$ut [Update Time]” on page 170).

8.2.3.1 \$st, \$et with relative time

Syntax:

`$st_([s] | [m] | [h] | [d]) 100 _ = back`

(h,m,s,d = Hour, min, sec, day. 100 is the amount)

This represents a time regarding to the current time expressed in days, hour, minutes or seconds. If no letter is specified minutes are considered.

Examples:

\$st_m10	10 minutes in the past
\$et_0	0 minutes in the past (= now)
\$st_d2	2 days in the past

Table 139: \$st with relative time examples

8.2.3.2 \$st, \$et with absolute time

Syntax:

`$stDDMMYYYY[_HHMMSS][[_mmm][[_I][[_T]]]]`

Where:

DDMMYYYY	Means Day, Month, Year, 8 characters. This parameter is required.
HHMMSS	Means Hour, Minute, Second, 6 characters. This parameter is optional (0 used by default)
mmm	Means milliseconds (000 to 999) 3 characters. This parameter is optional but if present, HHMMSS must also be specified.
I	Means intra sec counter. This value is present when receiving a historical logging from the eWON. It can be specified in export request to allow precise repositioning in the historical file. This parameter is optional, but if present, HHMMSS and mmm must also be specified.
T	Means Tag id. As for I, this parameter is used for precise positioning in historical file. This parameter is optional, but if specified, HHMMSS, mmm and I must be present also.

Table 140: \$st parameters

When ALL the Tags are specified, the Tag values are output in chronological order. For the same time there can be 2 Tag values. In order to reposition correctly in the file, it is necessary to provide the last Tag output during a previous export.

Examples:

\$st01012000_120000	1 jan 2000 at 12 AM
\$st01012000_120000_010	1 jan 2000 at 12 AM + 10 msec

Table 141: \$st with absolute time examples

8.2.3.3 \$st, \$et with Last time

By adding the \$ut command in an Export Block Descriptor, you can ask the eWON to remember the time of the last point exported, this time can be used for the next export.

The last time is reset when the eWON boots.

Syntax:

`$stL`

L is the time parameter meaning last time.

8.2.4 \$ut [Update Time]

This field has no parameter, it means that at the end of this export, the time of the last point exported must be saved in the eWON so that it can be used as a reference time for a later call.

Example:

```
$stL$set_0$ut
```

This sequence will specify a time range from last time to current time AND will ask to update the last time at the end of the export. The last time is stored on a per Tag basis if one Tag is specified for the export. A global last time can also be saved if "ALL Tag" is specified in an export.

8.2.5 \$tn [Tag Name]

This field is used to specify a Tag name. It is required for graph commands. The parameter specified is the name of the Tag. When a \$tn field can be specified for an export and no \$tn is given, then the command is executed for ALL the Tags.

Example:

```
$tnMyTag
```

(MyTag is the name of the Tag)

8.2.6 \$ct [compression format]

This field is only applicable when sending a file from the eWON to an FTP server, or as an attachment to an email. The compression format is gzip (<http://www.gzip.org>). So that the unique argument to add after the field "\$ct" is "G".

Example:

```
Putftp "test2.txt.gz", "[$dtUF $ctG $uf/test.txt]"
```

Or:

```
SENDMAIL "destinator@provider.net", "", "Subject", "Mail body &[$dtUF  
$uf/usr/test.txt $ctG $fn/test2.txt.gz]"
```

Note:

If you give to the destination file the ".gz" extension only (and not ".txt.gz" for example), the destination file will be correctly exported, but in this case you will have to indicate the extension when uncompressing ("txt" in the above case).

You can then use a tool such as Winrar to extract the file; it will be extracted in a folder named "test2.txt".*

**You can download a free trial version of this tool at the following address: <http://www.rarlab.com/download.htm>.*

8.2.7 \$se [Script Expression]

This field is only required for \$dtSE export data. The \$se parameter specifies the "script expression" to compute. Usually, the \$se parameter will be inserted between quotes because if a \$ is found in the expression it will be considered as the end of parameters.

Example:

```
$dtSE $se"A$"
```

(Exports the content of A\$)

8.3 Data Types description and syntax

A Data type defines what is exported from the eWON. The data type is defined by the \$dt field followed by 2 uppercase letters. The \$dt field is mandatory for each "Export Block Descriptor" and usually the \$ft (Format) field will also be present to define the output format of your data (although a default format is defined for each data type).

For each Data type, a set of other fields must be provided (some are mandatory and others are optional).

Note:

If you specify an unused field (neither mandatory nor optional), it will then be ignored.

This section will describe the syntax for each data type with the specific features for each of them.

8.3.1 \$dtHL [Historical Logging]

8.3.1.1 Export content

The Historical logging outputs the data from the File system for ONE or ALL the fields. The output format can be TEXT, HTML Table or BINARY. The GRAPH format is also available IF only ONE Tag is specified.

A time range can also be specified for this export.

8.3.1.2 Detailed Example

```
$dtHL $ftT $st_h4 $et_m0 $tnA1
```

\$dtHL	data type historical logging
\$ftT	output format requested is CSV
\$st_h4	start time is current time – 4 hours
\$et_0	end time is current time – 0 minutes ⇔ NOW
\$tnA1	Tag history to output

Table 142: \$dtHL detailed example

8.3.1.3 Used Fields

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Binary
\$st	01/01/1970
\$et	31/12/2030
\$tn	All
\$ut	No time update
\$fn	Export block descriptor
\$ct	Compression type

Table 143: \$dt - used fields

8.3.1.4 Special parameters and fields

\$st \$et

If Last time is specified: (\$stL or \$etL): there is a last time logged for each Tag plus a last time logged for all Tags. If you specify a given Tag, its own last time will be used. If a specific Tag is not requested, the export is performed for Tags concerned by historical logging and another last time memory is used.

If the output format is graph: \$et_0 should be used instead of default value, otherwise the graph would span up to 31/12/2030. For binary or text output, the default value can be kept.

\$ft

Acceptable values			
Binary	Text	HTML	Graph

Table 144: [\$dtHL] \$ft acceptable values

The Graph format is only allowed if a Tag has been specified.

The Text format will output a comma-separated file. The separator is ',' to avoid any confusion with decimal point. If all the Tags are output they will be output in a chronological order in the file.

\$ut

If only one Tag is specified, the time of the last point for that Tag will be memorized. All the Tags can be output individually and last time is saved for each point. Another memory is available if \$ut is requested for ALL the Tags.

\$tn

If this Tag is not specified, ALL the Tags will be selected for export. Otherwise, the Tag with the given name will be selected.

8.3.2 \$dtHT [Historical Table]

8.3.2.1 Export content

The historical table is a representation of the IRCALL.BIN (incremental recording).

This representation provides a recordings representation as a table where columns are Tag names and rows are recording times.

The features is also used in the VIEW area (see "Historical table" on page 151).

8.3.2.2 Detailed Example

```
$dtHT $ftT $st_h4 $et_m0 $flAB $in10
```

\$dtHT	data type historical table
\$ftT	output format requested is text (CSV)
\$st_h4	start time is current time – 4 hours
\$et_0	end time is current time – 0 minutes ⇔ NOW
\$flAB	Filter to Instant value groups A and B
\$in10	Interval fixed to 10 seconds

Table 145: \$dtHT detailed example

8.3.2.3 Fields used

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Text
\$st	01/01/1970
\$et	31/12/2030
\$fl	All tags are displayed
\$in	interval from the ircall.bin file

Table 146: \$dt - used fields

8.3.2.4 Special parameters and fields

\$ft

Acceptable values	
Text	HTML

Table 147: [\$dtHT] \$ft acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid confusion with decimal point.

\$fl (filter)

The filter can be used like for the instant values (\$dtIV), with an additional option 'X'

The \$fl can be any string containing A,B,C,D,X.

Example: ACX or BDAX or X

If no filter is specified then all the Tags with an enabled Historical logging are output.

If filter include "X", then tags without Historical logging enabled are also included, this is provided in case recording has been disabled but tags have been previously recorded in the file.

If filter include any of the A,B,C,D, then only the tags that belong to those groups are included in the output.

\$in (interval)

The Historical Table time interval definition can follow 2 different standards:

- **Historical file defined interval**
- **Fixed interval**

For fixed interval, \$in parameter must be used. The interval is defined in seconds.

Example: \$in10 to output one value every 10 seconds

If \$in is not specified, then the output time is defined by the time in the recording file.

Example:

Let's assume that we have 2 Tags logged with the following time and values (for clarity, the date has been omitted):

Time	Tag	Value
10:01:00	Tag1	1
10:10:00	Tag1	1.5
10:10:00	Tag2	1
10:11:00	Tag1	2
10:12:00	Tag1	3
10:21:00	Tag2	2
10:30:00	Tag1	4

If the fixed interval is not requested, then the following output will be produced

	Time	Tag1	Tag2
1	10:01:00	1	Undef
2	10:10:00	1.5	1
3	10:11:00	2	1
4	10:12:00	3	1
5	10:21:00	3	2
6	10:30:00	4	2

Notes:

At line 1, Tag2 is **Undef**, because no value are available in the log file.

At line 2, Tag1 and Tag2 are updated at on the same line, although there are 2 records in the incremental recording file, only 1 line is produced. So, except for the case when multiple Tags changed at the same time, when no interval is specified, the output contains one line for every record that has been logged.

If an interval of 10 minutes has been requested (\$in600), then the following output would be produced.

	Time	Tag1	Tag2
1	10:01:00	1	Undef
2	10:11:00	2	1
3	10:21:00	3	2

Notes:

The output starts with the first time found in the file then it increases by 10 minutes.

There is no record with time equal (or higher) to 10:31, so the last line is 10:21

If an interval of 10 minutes is requested and the start time is 10:00, then the following output would be produced.

	Time	Tag1	Tag2
1	10:00:00	Undef	Undef
2	10:10:00	1.5	1
3	10:20:00	3	1
4	10:30:00	4	2

Notes:

On the first line, no values are available for Tag1 or Tag2 before 10:01:00 (for tag Tag1) in the recording file, so the values are **Undef**.

8.3.3 \$dtRL [Real time Logging]

8.3.3.1 Export content

The Real time logging outputs the data from the File system for ONE Tag. The output format can be TEXT, HTML Table, BINARY or GRAPH. A time range can also be specified for this export.

8.3.3.2 Detailed Example

```
$dtRL $ftG $st_m10 $et_m0 $tnA1
```

\$dtRL	data type Real time logging
\$ftG	output format requested is GRAPH
\$st_m10	start time is current time – 10 minutes
\$et_0	end time is current time – 0 minutes ⇔ NOW
\$tnA1	Tag log to output
A1	Name of the Tag

Table 148: \$dtRL - detailed example

8.3.3.3 Used Fields

Fields	Value if not specified
Mandatory	
\$dt	
\$tn	
Optional	
\$ft	Binary
\$st	01/01/1970
\$et	31/12/2030
\$ut	No time update
\$fn	Export block descriptor
\$ct	Compression type

Table 149: \$dtRL - fields used

8.3.3.4 Special parameters and fields

\$st \$et

If the output format is "graph", \$et_0 should be used instead of default value, otherwise the graph would span up to 31/12/2030. For binary or text output, the default value can be kept.

\$ft

Acceptable values			
Binary	Text	HTML	Graph

Table 150: [\$dtRL] \$ft - acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid any confusion with the decimal point.

\$tn

A Tag MUST be specified for this export (does not work on ALL the Tags).

8.3.4 \$dtAH [Alarm History]

8.3.4.1 Export content

The Alarm History outputs data from the File system for ONE or ALL the Tags. The output format can be TEXT or HTML Table. A time range can also be specified for this export.

8.3.4.2 Detailed Example

```
$dtAH $ftH $st01012001
```

\$dtAH	data type Alarm history logging
\$ftH	output format requested is HTML table
\$st01012001	1 st of January 2001
\$et	not specified → until the end of file
\$tn	not specified → all the Tags

Table 151: \$dtAH - detailed example

8.3.4.3 Fields used

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Text
\$st	01/01/1970
\$et	31/12/2030
\$tn	All
\$ut	No time update
\$fn	Export block descriptor
\$ct	Compression type

Table 152: \$dtAH - fields used

8.3.4.4 Special parameters and fields

\$ft

Acceptable values	
Text	HTML

Table 153: [\$dtAH] \$ft - acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid any confusion with the decimal point. If all Tags are output they will be output in a chronological order in the file.

Line content of output file:

```
"EventDate"; "TagName"; "Status"; "UserAck"; "Description"
```

\$tn

If this Tag is not specified, ALL the Tags will be selected for export. Otherwise, the Tag with the given name will be selected.

8.3.5 \$dtAR [Alarm Real time]

8.3.5.1 Export content

The Alarm Real time outputs the real time data for ONE or ALL the Tags. The output format can be TEXT or HTML Table. If only ONE Tag is specified, 1 or 0 lines will be appended to the output header line (Time range is not applicable here).

8.3.5.2 Detailed Example

\$dtAR \$ftT

\$dtAR	data type Alarm Real time
\$ftT	output format requested is CSV
\$tn	not specified → all Tags

Table 154: \$dtAR \$ft - detailed example

8.3.5.3 Fields used

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Text
\$tn	All
\$fn	Export block descriptor

Table 155: \$dtAR - fields used

8.3.5.4 Special parameters and fields

\$ft

Acceptable values	
Text	HTML

Table 156: [\$dtAR] \$ft -acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid confusion with the decimal point. If all the Tags are output, they will be output in a chronological order in the file. Line content of output file:

"TagId";"AlarmTime";"TagName";"AlStatus";"AlType";"StatusTime";"UserAck";"Description"

\$tn

If this field is not specified, ALL the Tags will be selected for export. Otherwise, the Tag with the given name will be selected.

8.3.6 \$dtEV [Event file]

8.3.6.1 Export content

The Event file outputs data from the File system. The output format can be TEXT or HTML Table. A time range can also be specified for this export.

8.3.6.2 Detailed Example

```
$dtEV $ftT $st_m30
```

\$dtEV	data type events logging
\$ftT	output format requested is CSV
\$st_m30	last 30 minutes
\$et	not specified → until now

Table 157: \$dtEV - detailed example

It will output a CSV file containing the events during the last 30 minutes.

8.3.6.3 Fields used

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Text
\$st	01/01/1970
\$et	31/12/2030 ⇔ NOW
\$fn	Export block descriptor
\$ct	Compression type

Table 158: \$dtEV - fields used

8.3.6.4 Special parameters and fields

\$ft

Acceptable values	
Text	HTML

Table 159: [\$dtEV] \$ft - acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid any confusion with the decimal point. Line content of output file:

```
"EventTimeInt";"EventTimeStr";"Event"
```

EventTimeInt	Time provided as an integer (number of seconds since 1/1/1970)
EventTimeStr	Date and time as text

Table 160: EventTime types

8.3.7 **\$dtSS [Scheduled Status]**

8.3.7.1 **Export content**

The scheduled actions are actions that are executed in a scheduled manner, for example: PutFTP, Send Mail, Send SMS. When one of these actions is requested, it does not occur immediately, but it is queued for a sequential execution. This export allows checking the content of this queue and giving the status of all the actions in queue: "in progress", "executed (success)" and "executed with error".

8.3.7.2 **Detailed Example**

\$dtSS

8.3.7.3 **Fields used**

Fields	Value if not specified
Mandatory	
\$dt	
Optional	
\$ft	Text
\$fn	Export block descriptor

Table 161: \$dtSS - fields used

8.3.7.4 **Special parameters and fields**

\$ft

Acceptable values	
Text	HTML

Table 162: [\$dtSS] \$ft - acceptable values

Text format will output a comma-separated file. The separator is ';' to avoid any confusion with the decimal point. Line content of output file: "ActionId", "ActionType", "StatusCode", "StatusText", "Start", "End"

8.3.8 \$dtSE [Script Expression]

8.3.8.1 Export content

This export provides a means to get the content of a script expression. The script expression is a standard eWON Basic-like expression returning a STRING, and INTEGER or a FLOAT. The evaluation of the expression will always occur between 2 scripts execution, for example between 2 ONTIMER executions, or between 2 cycles of the cyclic sections.

8.3.8.2 Detailed Example

```
$dtSE $se"A$"
```

8.3.8.3 Fields used

Fields	Value if not specified
Mandatory	
\$dt	
\$se	
Optional	
\$ft	Binary
\$fn	Export block descriptor

Table 163: \$dtSE - fields used

8.3.8.4 Special parameters and fields

\$ft

Acceptable values		
Text	HTML	Binary

Table 164: [\$dtSE] \$ft - acceptable values

Binary and Text format means that the output is the content of the Script Expression itself.

HTML output supposes that the content of the script expression is a comma-separated data (string between quotes, items separated by ';' and end of lines marked with CRLF (0x0d, 0x0a)). Then the exported output is an HTML table containing these data.

\$se

Defines the script expression to output, usually this expression is typed between quotes because \$ characters are considered as separator otherwise.

8.3.9 \$dtUF [User File]

8.3.9.1 Export content

The User File export returns the content of a file in the User File area (/usr/ directory – or subdirectory).

When the file is exported, the <%#ParamSSI> and <%#TagSSI> Tags are replaced by the actual values.

8.3.9.2 Detailed Example

```
$dtUF $uf/ufdir/uf1.txt
```

\$dtUF	User file
\$uf/ufdir/uf1.txt	Will export the <i>uf1.txt</i> file located in the <i>/usr/ufdir</i> directory

8.3.9.3 Used Fields

Fields	Value if not specified
Mandatory	
\$dt	Must always precede "UF": dtUF (means Data Type= User File)
\$uf	
Optional	
\$fn	
\$ft	Binary
\$ct	no compression

Table 165: \$dtUF - used fields

8.3.9.3.1 \$uf [User File Name]

This field is the name of the user file that you want to export (source name).

The file name can be preceded by the name of the subdirectory inside the /usr directory:

```
/myfile.txt
```

(myfile.txt is in the /usr directory)

```
/mydir/myfile.txt
```

(myfile.txt is in the /usr/mydir directory)

Note: The first "/" is optional.

The complete path can also be specified:

```
/usr/myfile.txt
```

(myfile.txt is in the /usr directory)

```
/usr/mydir/myfile.txt
```

(myfile.txt is in the /usr/mydir subdirectory)

Note:

The first "/" is mandatory.

Example:

```
Putftp "/test.txt", "[ $dtUF $uf/myfile.txt ] "
```

8.3.9.3.2 \$fn [Destination File Name]

This field is used for specifying a file name to the export data (destination name). Usually this file name is used to specify the output of the data, for example when sending an attachment to an email. In this case, the \$fn file name gives the name of the attachment:

When doing a PUTFTP, then \$fn does not need to be specified, because the PUTFTP command manages the name of the destination file:

```
PUTFTP "MyFileWithANewName.txt", "[ $dtUF $uf/myfile.txt ] "
```

There is one special case: when a user file (\$dtUF\$fn) is exported and you do not specify the *source name* (\$uf); in that case, the \$fn parameter is used as source and as destination file name.

Examples :

Using \$fn in a send mail string:

```
SENDMAIL "MailReceiver@YourMail.com", "", "Mail Subject", "Mail text &[$dtUF$fn/myfile.txt]"
```

Use the above syntax if you want the attached file to keep its name

```
SENDMAIL "MailReceiver@YourMail.com", "", "Mail Subject", "&[$dtUF $uf/myfile.txt $fn/myfile2.txt]"
```

Use the above syntax if you want the attached file to be received with a different name.

8.3.9.3.3 Special parameters and fields

- \$ftB "File Type" binary (default). Other types are unavailables (HTML, Text or Graph)
- \$ctG "Compression Type" GZ.

8.3.10 \$dtIV [Instant Values]

8.3.10.1 Instant value - general information

Instant value means values of Tags at a given time. The file of instant value contains for each Tag the following information:

TagId	Id of the Tag
TagName	Name of the Tag (in text mode)
Value	Current value of the Tag
AIStatus	Current alarm status of the Tag
AIType	Type of the current alarm

Table 166: \$dtIV - instant value file's informations

- The file containing the instant values for every Tag is available in binary or text format; you can download the instant values file directly from the root of the eWON root file list, or you can address it by using an Export Block Descriptor.
- The instant values file normally contains all the Tags, but there is an additional feature that allows obtaining only the instant values from specific Tags.
- In the Tag definition, there is a new config in the "Tag visibility section".
- There is a group of 4 check boxes, each of them being associated to a group called A, B, C, D (4 groups).
- Every Tag can belong to no group, one group, or more than one group.
- These groups are only used when reading the instant values using an Export Block Descriptor; in that case there is an additional field in the Export Block Descriptor. That allows to request the instant values for the Tags belonging to one or more groups.

IMPORTANT:

Regardless of the group definition for each of the Tags, the inst_val.txt and inst_val.bin files (see below) always return the instant value for ALL Tags.

These groups have nothing in common with the A, B, C topics of the IO servers. They are defined in the context of the Instant Values!

• **Root file access**

In the eWON root folder (FTP access or file transfer) you will find the following 2 files:

inst_val.txt	instant values in text mode
inst_val.bin	instant values in binary mode

8.3.10.2 Alarm status code values

The below table lists the different values that the field **AIStatus** can have, depending on the Alarm State and of the action the user has performed on it:

Alarm Status	Alarm Status Value	Alarm status explanations
NONE	0	Tag is not in alarm status
PRETRIGGER	1	Tag is in pretrigger alarm status Warning: we assume there is no alarm if AIStatus value <= Alarm Pretrigger
ALM	2	Tag's alarm status is active
ACK	3	Tag's alarm has been acknowledged
RTN	4	Tag's alarm returns from an active status

Table 167: inst_val.txt file - alarm status code values

8.3.10.3 Alarm type values

The table below lists the different values that the field **AlType** can have, depending on the type of threshold that has been stepped over by the Tag value, depending on the configuration set in the Tag's configuration page:

Alarm Type	Alarm Type Value	Alarm type explanations
NONE	0	The Tag value is inside of the limits beyond of which the alarm is triggered
HIGH	1	The Tag value exceeds the value entered in the Alarm Level High field from the Tag configuration page
LOW	2	The Tag value is less than the value entered in the Alarm Level Low field from the Tag configuration page
LEVEL	3	The Tag value matches the Boolean Alarm Level value defined in the Tag configuration page
HIGH_HIGH	4	The Tag value exceeds the value entered in the Alarm Level HighHigh field from the Tag configuration page
LOW_LOW	5	The Tag value is less than the value entered in the Alarm Level LowLow field from the Tag configuration page

Table 168: inst_val.txt file - alarm type values

8.3.10.4 Writing Instant Values to the eWON

The instant values file can also be written to the eWON. The file must be written by FTP to the ftp root folder and must be written to the file. All the Tags value present in the file will be used to change the corresponding Tag in the eWON. If a Tag is not found, then it will be ignored.

• **Writing in binary format:**

- The file format must comply exactly with the definition (see below) and all Tags are identified by their Tag ID.

• **Writing in text format:**

- When writing the instant value in text format, there are different possibilities to address the Tag:
- If a "TagName" column is present, then the Tags will be accessed by their name (even if a "TagId" column is present)

Example:

```
"TagId"; "TagName"; "Value"; "AlStatus"; "AlType"
```

```
1; "M1"; 10.000000; 0; 0
```

```
2; "M2"; 20.000000; 0; 0
```

If a "TagName" column is NOT present, the Tags will be accessed by their id:

```
"TagId"; "Value"; "AlStatus"; "AlType"
```

```
1; 10.000000; 0; 0
```

```
2; 20.000000; 0; 0
```

WARNING:

Remember that the Tag Id is not an index, but a unique number that has been allocated to the Tag when created, and cannot be reused unless the configuration is erased and a new configuration is created.

8.3.10.5 Binary file format

The file starts with a Header that can be represented by the following C structure:

```
struct InstantValueHeader
{
    int    Rev;
    int    RecSize;           //Record size
    int    NbTag;             //Number of Tags exported
    int    RecFlag;           //Reserve (must be set to 0)
    int    Reserved2;
}
```

Then there is a record number for each Tag (the record number can be obtained from the header (NbTag):

```
struct InstantValueRecord
{
    int    TagId;
    float  Value;
    int    AlStatus;
    int    AlType;
    int    Reserved;
}
```

WARNING:

All data in these records are stored in BigEndian

Until more information is available in this chapter, please refer to "Technical Note 03" for more information about eWON's data representation of floats and big endian format (<http://support.ewon.biz>).

8.3.10.6 Export content

The \$dtIV Tag exports either the entire content of the Instant Value file (txt or binary format) or only a part of it, depending on the parameters that might have been defined with the \$fl field.

8.3.10.6.1 Detailed examples

\$dtIV \$flAB	Will export all the Tags belonging to group A or B
\$dtIV \$flA	Will export all the Tags belonging to group A
\$dtIV \$fl	Will export no Tag (useless)
\$dtIV \$flABCD	Will export all the Tags belonging to group A or B or C or D (but missing Tags that belong to no group)
\$dtIV	Will export all the Tags regardless of group definition

Table 169: \$dtIV - detailed examples

8.3.10.6.2 Fields used

Fields	Value if not specified
Optional	
\$fl	

Table 170: \$dtIV - used fields

8.3.10.7 \$fl [Group or Groups]

The \$fl (for filter) field must be directly followed by a list of one or more groups A, B, C or D (that have been checked in the Tag's configuration). There must be no other character in the filter and all the groups must be in uppercase.

Example:

```
$dtIV $flAB
```

It will export all the Tags belonging to group A or B.

8.3.11 \$dtSV

8.3.11.1 Export content

\$dtSV returns the value of a defined eWON system variable. A typical use is when the user wants to include the eWON online IP address in an email by using the sendmail Basic syntax. The output format can only be of TEXT type.

8.3.11.2 Detailed Example

```
sendmail "user@user.be", "", "Ip", "The eWON online IP address is:
[$dtSV$seOnlineIpAddr]"
```

\$dtSV	Data type system variable
\$se	Will export a system expression
OnlineIpAddr	The current eWON online IP address (ie. 192.168.10.15)

Table 171: \$dtSV - detailed example

Will include the eWON online IP address in the body from a sent eMail.

8.3.11.3 Used Fields

Fields	Value if not specified
Mandatory	
\$se	System expression. At this time, only "OnlineIpAddress" is available

Table 172: \$dtSV - fields used

8.3.12 \$dtPP

8.3.12.1 Export content

\$dtPP exports the dump.ppp file (binary format): the file in which the online eWON activity is logged. The output format can only be of BINARY type.

8.3.12.2 Detailed Example

```
sendmail "user@user.be", "", "eWON PPP dump", "&[$dtPP$fdump.ppp]"
```

\$dtPP	Data type PPP dump
\$fn	Will give the required name to the file

Table 173: \$dtPP - detailed example

Will attach the eWON PPP dump file to a the eMail.

8.3.12.3 Used Fields

Fields	Value if not specified
Optional	
\$fn	File name

Table 174: \$dtPP - used fields

8.3.13 \$dtES

8.3.13.1 Export content

\$dtES exports the estat.htm file : the file that lists the current status from the main eWON features. The output format can be TEXT or HTML.

8.3.13.2 Detailed Example

```
sendmail "user@user.be", "", "eWON estat file", "&[$dtES$ftH$fnestat.htm]"
```

\$dtES	Data type estat file
\$ftH	Will export the file in htm format
\$fn	Will give to the file the required name

Table 175: \$dtES - detailed example

Will attach the eWON estat.htm file to the eMail.

8.3.13.3 Fields used

Fields	Value if not specified
Optional	
\$ft	File type
\$fn	File name

Table 176: \$dtES - fields used

8.3.14 \$dtSC

8.3.14.1 Export content

\$dtSC exports the communications configuration file (comcfg.txt): the file that lists the current status of the main eWON communication features. The output format can be TEXT or HTML.

8.3.14.2 Detailed Example

```
sendmail "user@user.be", "", "eWON COM config file", "&[$dtSC$ftH$fncomcfg.htm] "
```

\$dtSC	Data type COM config file
\$ftH	Will export the file in htm format
\$fn	Will give to the file the required name

Table 177: \$dtSC - detailed example

It will attach the eWON comcfg.htm file to the eMail.

8.3.14.3 Used Fields

Fields	Value if not specified
Optional	
\$ft	File type
\$fn	File name

Table 178: \$dtES - used fields

8.3.15 \$dtRE [Real Time Diagnostic]

8.3.15.1 Export content

\$dtRE exports the Real Time Diagnostic data (equivalent to the real time log, see "Real Time Log" on page 161)
The output format can be TEXT only.

8.3.15.2 Detailed Example

```
sendmail "user@user.be", "", "eWON Real Time Log", "&[$dtRE$fndiag.txt]"
```

It will attach to an email the file "diag.txt" holding the real time diagnostic of the eWON.

\$dtRE	Data type : Real Time Diagnostic
\$fn	Will give to the file the required name

Table 179: \$dtRE - detailed example

8.3.15.3 Used Fields

Fields	Value if not specified
Optional	
\$ft	File type (only T available)
\$fn	File name

Table 180: \$dtRE - used fields

8.3.16 \$dtTR [TAR file]

8.3.16.1 Export content

\$dtTR exports the eWON file(s) inside a TAR formatted file.

The data to include in the TAR file can be defined using a single file list, a directory and wildcard "*", or/and another export block descriptor's.

8.3.16.2 Detailed example

```
$dtTR $td {/usr/*} $fnmytar.tar
```

Put the complete /usr directory in the mytar.tar file.

\$dtTR	Data type : TAR file
\$td	Data : {/usr/*} the complete /usr directory
\$fn	mytar.tar

Table 181: \$dtTR - detailed example

8.3.16.3 Used Fields

Fields	Value if not specified
Mandatory	
\$td	Data
\$fn	File name
Optional	
\$ft	B

Table 182: \$dtRE - used fields

8.3.16.3.1 \$fn [output filename]

\$fn is used to define a name for the output file.

example: `$fnMyDataFile.tar` will produce a TAR file with the name "MyDataFile.tar".

8.3.16.3.2 \$td [TAR data]

The data consists in a list of items separated by ',' (comma).

The items are specified between "{" (curly brackets).

`$td {item1},{item2},...,{itemX}`

Each item is one of these:

- A /usr file name (complete path to file)
- A /usr directory name (complete path to directory) followed by *
- An export block descriptor

If the path represents a directory followed by * then the whole tree is exported.

8.3.16.4 TAR format and eTAR modified format

The TAR file produced by the eWON could be :

- a standard TAR file, compliant to the USTAR (Uniform Standard Tape Archive) format.
- a modified TAR file, called eTAR.

Standard TAR file can be opened by most of Packager Program like Winzip, WinRar.

Due to technical reasons, the eWON produces an eTar format when the package holds file(s) belonging to the eWON root directory.

This eTAR file is viewed as a "corrupted file" by Packager Program. But, you can use our eTar.exe tools to reformat this eTAR as a valid TAR file.

You can find this eTar.exe program on the www.ewon.biz website, on the [Download Software](#) page.

8.3.16.5 Examples

```
$dtTR $td {/usr/file1.txt} $fnmytar.tar
```

Will make a TAR file named "mytar.tar" containing the file /usr/file1.txt

```
$dtTR $td {/usr/MyFile1.txt},{/usr/MyFile2.txt} $fnmytar.tar
```

Will make a TAR file named "mytar.tar" containing the files /usr/MyFile1.txt and /usr/MyFile2.txt

```
$dtTR $td {$dtCF $ftT $fnMyConfig.txt} $fnmytar.tar
```

Will make an eTAR file named "mytar.tar" containing the eWON configuration file named "MyConfig.txt"

```
$dtTR $td {/usr/file1.txt},{ $dtCF $ftT $fnMyConfig.txt} $fnmytar.tar
```

Will make an eTAR file named "mytar.tar" containing the eWON configuration file named "MyConfig.txt" and the file /usr/file1.txt

```
$dtTR $td {/usr/*} $fnmytar.tar
```

Will make a TAR file named "mytar.tar" containing all the /usr directory

```
$dtTR $td {/usr/*},{ $dtPG $fnprogram.bas},{ $dtCF $ftT $fnconfig.txt},{ $dtSC $ftT $fncomcfg.txt} $fnmytar.tar
```

Will make an eTAR file named "mytar.tar" containing
all the /usr directory,
the program file named "program.bas",
the configuration file named "config.txt"
and the communication configuration file named "comcfg.txt"

```
putftp "Test_TAR.tar", "[ $dtTR $td{/usr/Page1.shtm},{/usr/Page2.shtm}] "
```

Will put by FTP the file "Test_TAR.tar" containing the files Page1.shtm and Page2.shtm.

Note that for FTP action, the filename is the first parameter of the PutFTP instruction, then the \$fn parameter is not required in the TAR command.

note: It is forbidden to include an item that described a TAR format itself.

THE TAR IS NOT RECURSIVE !

Forbidden example: \$dtTR \$td{ \$TR }

8.3.17 Additional exports available

\$dtTL	Tag List
\$dtPG	Program
\$dtCF	Configuration File

Table 183: additional exports available

These are all the files from the eWON configuration. They are equivalent to the file available through the eWON FTP server.

9 Upgrading the eWON firmware

9.1 Purpose

There are two ways to upgrade the eWON firmware: by using eBuddy, the eWON utility designed to set up the eWON, or by directly uploading a new firmware on the eWON by means of a FTP client.

9.2 Upgrading the eWON firmware with eBuddy

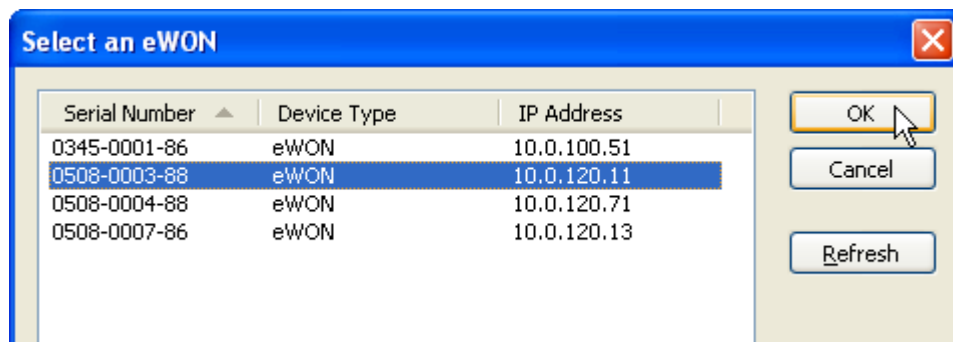
eBuddy allows you to update your eWONs with the latest firmware versions that are available for download from the eWON web site.

eBuddy downloads the firmwares and it stocks them in a folder on the local machine.

When you use the *Update Firmware* feature, eBuddy compares the firmware on the selected eWON with the latest firmwares, and it proposes to you to upgrade your eWON with one of the stored and up-to-date firmwares.

That means you first have to update eBuddy itself prior to upgrade the eWON firmware (please refer to the "eBuddy User Guide" you can download from Support/Documentation/User guides on <http://www.ewon.biz>).

The second link in the eBuddy Wizard home page is used if you want to update the firmware from one of the eWONs on your network. Click on the link to launch the wizard:

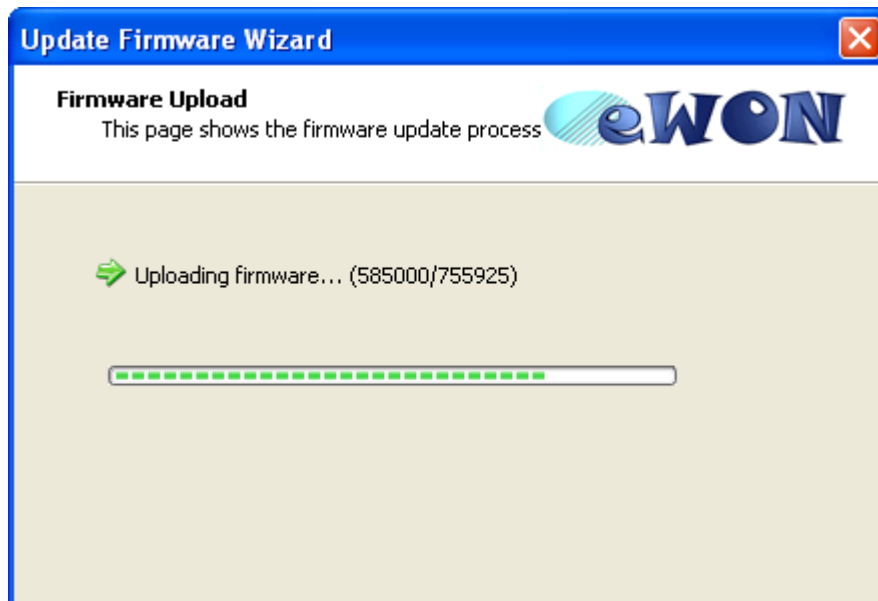


Select an eWON, either by entering directly its serial number or by choosing it in the *Select an eWON* dialog box; enter the login and password for the eWON, then click on **Next** in the *Update Firmware Wizard*.

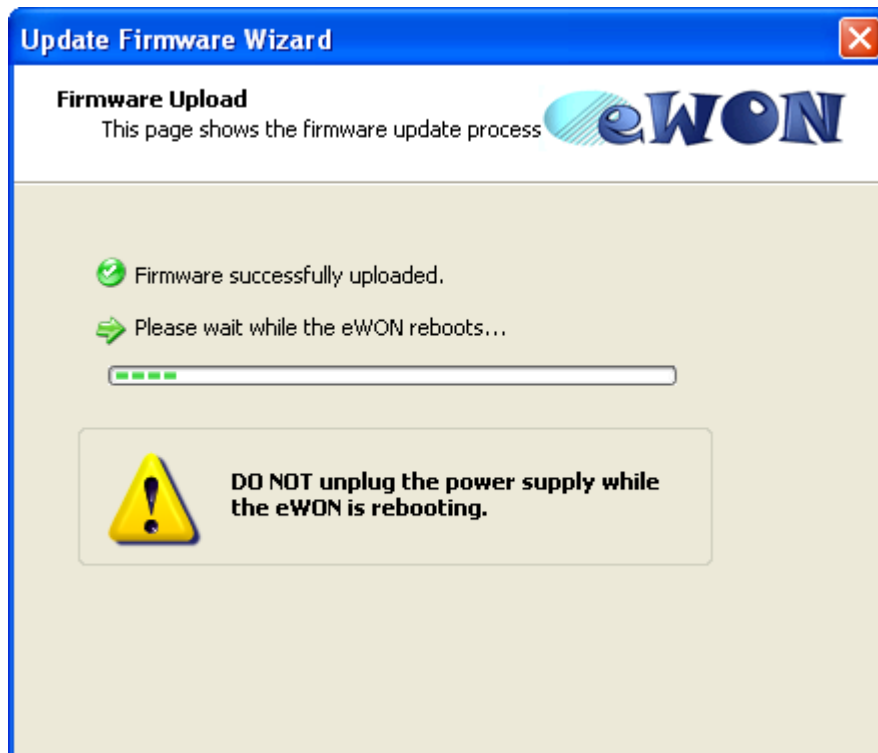


Select the firmware **Language** and **Version** you want to apply, then click **Next**.

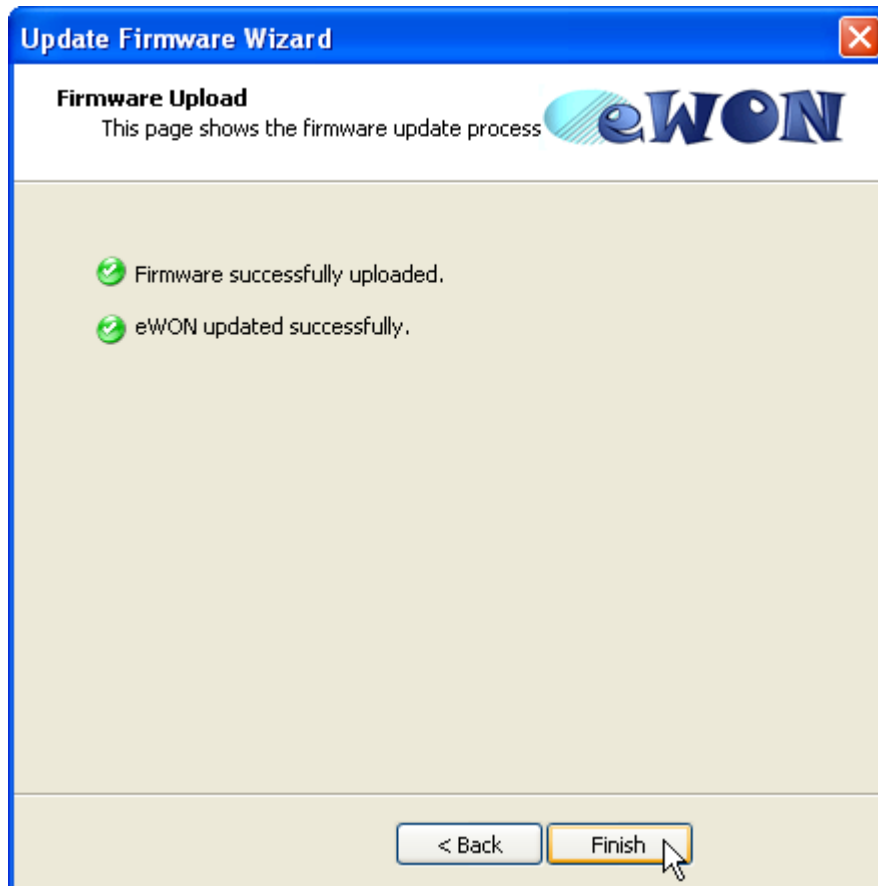
The new firmware is uploaded to the selected eWON:



Click on Next when upload is complete, the following dialog box then appears. Please DO NOT power OFF the eWON when it restarts, or this could lead to make it unusable.



Click on the **Finish** Button when the upgrade is complete and exit from the Wizard.



9.3 Upgrading the eWON firmware by a direct upload

The eWON's firmware can also be upgraded using FTP.

Just download the eWON firmware file (ewonfwr.edf) corresponding to your eWON type from our web site (<http://www.ewon.biz>), and put this file on your eWON using FTP.

You can do this using any FTP client program, just be sure that you use the binary transfer mode and not ASCII.

If you don't have a FTP client program, you can download the SmartFTP tool available on our Web site <http://www.ewon.biz>.

To upgrade the eWON firmware using for example SmartFTP as FTP client, please follow the following instructions:

- **Start the SmartFTP program.**
- **Type in the eWON IP address in the "URL" field, the user name in the "Login" field and the user password in the "Password" field.**

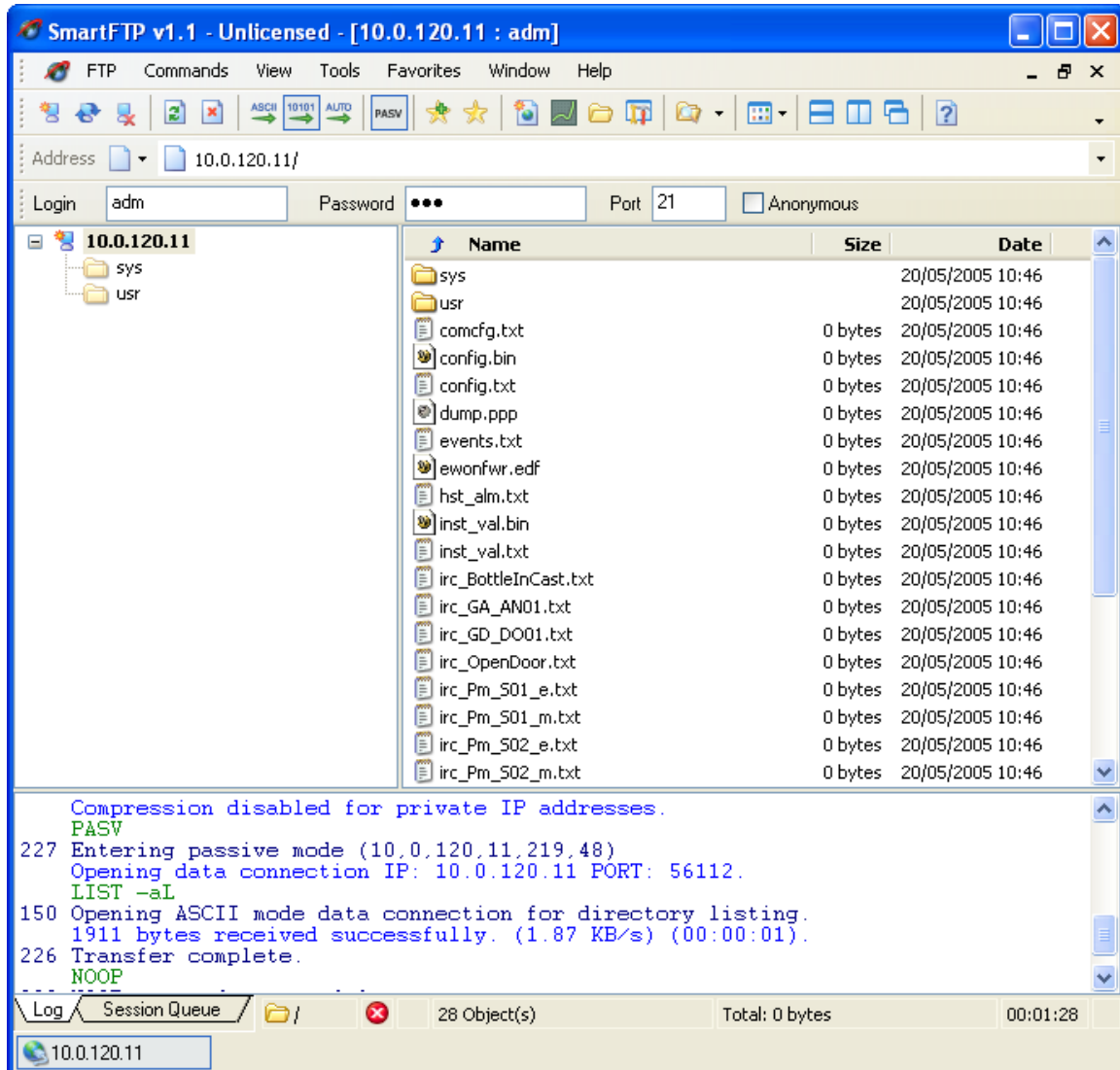


Figure 138: Connection to eWON through SmartFTP

- Click on the "Connect" icon in the SmartFTP window to connect to the eWON with the parameters that you entered. A new window appears showing all the files that are present in the WON.

- Simply drag the new firmware to be uploaded (from your local hard disk or from another FTP folder) and drop it to the root of the eWON file system (here the window is named "10.0.120.11"). A confirm window will appear asking you the action to be performed.

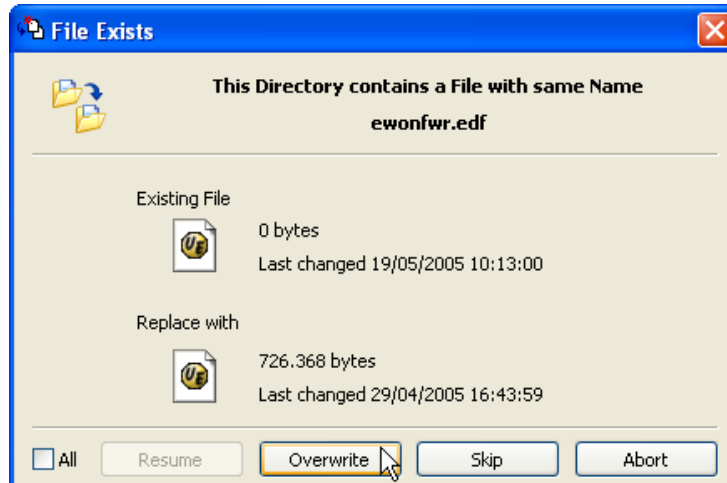


Figure 139: eWON firmware overwrite confirmation window

- Click on the **Overwrite** button and wait the fill in (blue) of the progress bar in the left bottom side of the window.

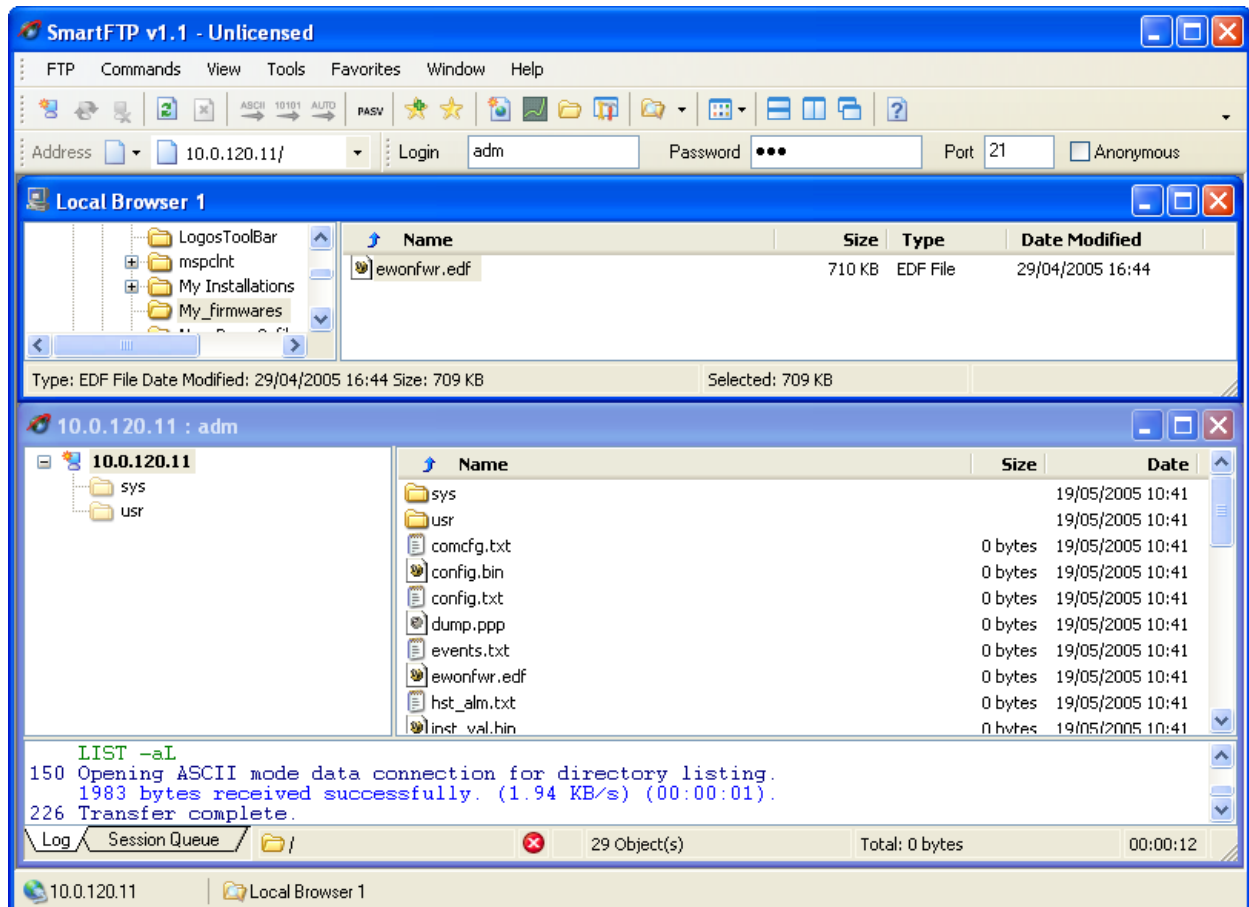


Figure 140: eWON upload firmware action

- Click on the "Disconnect" icon to exit the connection to the eWON and quit the SmartFTP program.

WARNING:

When you click on the "Disconnect" icon, the eWON begins a flash memory programming operation (about one minute long).

Do NOT power off the eWON during this operation. If you have a look at the eWON STATUS led, it will be blinking red about once a second. When it finishes blinking, the eWON will reboot. The reboot operation can be observed on the Ethernet link led, going off and then back on again.

Please do NOT remove power until you can get access to the eWON using your web browser or FTP browser. Failure to do so can lead to the destruction of the eWON and a factory return would be unavoidable.

9.4 Downgrade firmware

9.4.1 *Firmware prior to 5*

On firmware version prior to 5.x, the downgrade procedure is the same as the upgrade procedure :
- use the "ewonfwr.edf" of the target firmware and copy it on the eWON root directory by FTP.

Note: After a downgrade, it is recommended to format completely your eWON.

9.4.2 *Firmware version 5.x (and above)*

On firmware version 5.x (and above), to downgrade your eWON:

- the firmware file "ewonfwr.edf" need to be renamed in "**dewonfwr.edf**" (note the leading 'd')
- copy this dewonfwr.edf on the eWON root directory by FTP.

Note: You need to rename the ewonfwr.edf file only for downgrading !

Service release firmware versions are not considered as downgrade.

Examples:

5.0 is lower than 5.1

5.0 S4 is not lower than 5.0 S7 (Service release on the same firmware version 5.0)

4.3 is lower than 5.0

The download operation is slightly different: when the flashing operation starts, the led will first flash red – green – off repetitively, then the normal flashing sequence with red flash will start.

The first operation consists in a complete memory erasure.

Important : This downgrade erases ALL eWON configuration files (comcfg.txt too) !

The eWON IP address return to 10.0.0.53 and modem parameters return to default.

Never do a downgrade from a 5.x firmware version remotely !

So please backup the txt config version, comcfg, and /usr data before downgrading.

9.5 Upgrade Bootloader (to upgrade to firmware >= 5.2)

Since firmware version 5.2, the Bootloader of the eWON must be greater than 2.0.

Every eWON produced with a serial number greater or equal to 0648-xxxx-xx have already this bootloader 2.0.

The eWON produced before 0648-xxxx-xx exceptionally need to be upgraded. The Bootloader 2.0 is required to upgrade eWON to firmware 5.2. In order to do that, a *bootldr.bin* file must be downloaded in the eWON by FTP. There is no need to reboot after the bootloader upgrade. You can find the bootldr.bin file on the eWON website <http://support.ewon.biz> in the "Support - Download Firmware" section.

The eWON data or config is NOT affected by this upgrade.

Important: *You should not remove the power during a bootldr upgrade.*

9.5.1 Error Message

If a firmware with revision >=5.2 is downloaded in the eWON, and the bootloader has not a version > 2.0, the eWON will generate an error and the firmware will be refused.

A simple download of the bootloader will solve the problem and allow you to download the >=5.2 firmware.

For firmware <5.1 (5.0, 4.3, etc..), in the Event Log (or in Events.txt file) the message will be **"riftp-Invalid EDF revision"**

For firmware >=5.1 (5.1, 5.1s1, 5.1s2), in the Event Log (or in Events.txt file) the message will be **"Bootloader upgrade required"**

9.5.2 Checking your boot loader version

It can be checked in the estat.htm file or with *Export Bloc Descriptor* \$dtES.

SIFBootldrRev: 00020003

Or in the Diagnosis/status/Info page:

Features	EF0000
Boot loader revision	00020003

In the above examples, the Bootloader version is 2.3.

note: bootloader version display only available since eWON firmware 5.2

10 Appendix

10.1 Access to the eWON Technical Support

An eWON technical support is provided on our Web site (<http://www.ewon.biz/>). Just fill in the support request sheet (/Support/Support request), or send your problem description to support@ewon.biz. Our support team will provide you technical information to help you solving any issue you could encounter to configure your eWON (even if we think that this User Manual answers the more exhaustively as possible to such questions), or to integrate it or collecting information on your industrial networks.

10.2 eWON configuration and files storage

This chapter explains how the data storage is organized in the eWON.

10.2.1 Flash file system

The eWON uses a flash file system that uses a 8, 16 or 32 MBytes flash area.

Flash Memory	eWON types
8 MB	<ul style="list-style-type: none"> • eWON500 • eWONx001 • eWON4002
16 MB	<ul style="list-style-type: none"> • eWONx005 • eWONx101 • eWON4102
32 MB	<ul style="list-style-type: none"> • eWONx005CD • eWONx104

Table 184: Flash memory vs eWON type

The following files are saved in this flash file system:

File	Type	Max Size	Description
Configuration (Except COM configuration)		256K	Configuration file: <ul style="list-style-type: none"> • System setup • Pages setup • IO Servers setup • Tags setup • Users setup Note: The content of the COM setup page is not saved here
Program		128K	Script program
/usr directory		1 to 3 MB 4 to 6 MB 14 to 16 MB	Content of the whole /usr directory and its subdirectories. The size of the /usr directory can be defined by the user since version 4
Event file	C	128K	Event file
Alarm History	C	128K	Alarm history file Max number of alarm history: 8192
Historical logging	C	16384, 73728 or 139264 points	Historical logging file

Table 185: Flash file system - files type and size

Important:

“C” file type means that the file is a circular file. This kind of file has 2 sizes, the standard size and the maximum size. When the maximum size is reached, the oldest 64K of data are erased and new data starts to be written. This means that the actual size of data that has to be considered for a circular file is the standard size, because the maximum size is not permanent.

Formatting the Flash file system means erasing all the data in these files.

10.2.2 Non-volatile configuration

There are 2 additional blocks of flash memory used for:

- **Non-volatile COM configuration:** this block contains the "System COM" setup.

- **Retentive values:**

Each time a retentive value changes, a record is written in flash, the record is 12 bytes long.

This file is also erased when the flash file system is formatted.

The flash memory can be erased/written minimum 100K times

Each time a retentive value is written, its record is read back and content is verified, in case of error, error code "Write retentive failed", code **20517** is generated, it indicates that flash is probably dead.

10.3 Tips for Internet setup

10.3.1 Finding the IP address of a given host

The eWON does provide DNS (Domain Name Server) resolution. But, sometimes, it's faster to access Internet nodes by its IP address.

In order to find the address corresponding to a given name, you can use the **ping -a NodeName** command. This command will return miscellaneous information including the IP address of **NodeName** that you need.

Example:

```
C:\>ping -a microsoft.com
Pinging microsoft.com [207.46.197.101] with 32 bytes of data:
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Ping statistics for 207.46.197.101:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

The microsoft.com IP address reported is 207.46.197.101 for this example.

10.4 Finding your PC IP address

Under Windows 95/98, the **WINIPCFG** command (executed from a command prompt or from the **START/RUN** menu) will return your Ethernet and PPP adapter IP address. If not currently connected through PPP, the PPP IP address is N/A.

WINIPCFG DOS command does not exist anymore on Millennium, Windows NT, 2000 and XP systems.

The **IPCONFIG** command can be used instead. This command must be executed from a command prompt and displays as text the IP address of all the TCP/IP adapters that are detected.

Example:

```
C:\>ipconfig
Windows 2000 IP Configuration
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . :
    IP Address. . . . . : 10.0.0.11
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :
```

10.5 Resetting the eWON

10.5.1 Overview

In some situation it may be desired or required to initialize the eWON.

The eWON has a non volatile memory which is used to store configurations and acquired data. Non volatile information is basically divided into 2 groups:

- **Communication configuration**
- **The rest of the non volatile data (file system, Tag Config, user defined web site, etc.)**

The reset button is located between the **SERIAL** and **LINE** connectors. A very small hole is located in the box; you will need a thin tool like a paper clip to push the button.

The button must be pressed while the eWON is powered up. The button must be maintained until correct initialization level has been reached (see below):



Figure 141: eWON - reset hole and "USER" led

10.5.2 Reset sequence

There are 2 initialization levels:

- **The first level (the more usual) will force a format of the eWON.**
- **The second level will reset the eWON in a state corresponding to the "out of the box" configuration. By doing this you will also perform a thorough self test of the eWON.**

10.5.2.1 First level reset

When the eWON boots with the reset button pressed, after 4 seconds, the "USER" led will start blinking in **red** at a 1 flash per second rate. As soon as the led starts blinking at that rate, release the switch. The Format request will be set. The blinking will continue during 15 seconds, so there is no need to hurry, but you must release the switch before the 15 seconds elapse.

10.5.2.2 Second level reset

If the reset button is maintained for more than 15 seconds after blinking starts, the "USER" led will stop blinking and will become **solid red**, at that moment the "Out of the box reset" is registered, the reset button can be released and all the data of the eWON will be erased, including its communication, IP address,... parameters.

The eWON configuration tool **eBuddy** will be required to define your eWON working IP address.

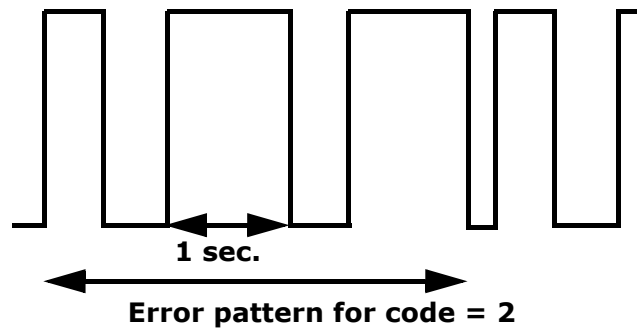
Note: if you have waited too long and the "USER" led becomes "solid red" while you only needed to format the eWON, the only solution is to keep the reset button pressed and remove the eWON power, this will avoid entering the "Full Erase" procedure.

10.5.3 Second level initialization diagnostics

When the second level initialization is requested, the eWON will also perform a self test. When the initialization ends, the test result is displayed via the "USER" led. If the test is successful, the following pattern will be displayed on the led.

The led will flash for 200msec every 1.5 seconds. The pattern is repeated indefinitely until the eWON is manually rebooted (Power OFF/Power ON).

If an error is detected during the test, the led will show the error code with the following pattern:



This example shows the case where error code is 2. The pattern is repeated indefinitely until the eWON is manually rebooted (power OFF/Power ON).

The pattern starts with a short blink of 200msec indicating the pattern start, then N blinks, each during 1 second are displayed. Then the pattern is repeated, etc.

The number of 1 second blinks is defined by the type of error detected:

Number of blinks	Error meaning
1	RAM Test error
2	Flash erase error
3	Flash write error
4	Real Time Clock error
5	Flash identification failed
6	IO CPU not responding

Table 186: eWON USER led blinks meaning

10.5.4 Entering level 2 initialization without request

The eWON may enter level 2 test without request in the following case:

- If the IO CPU is not responding at boot time

In that special case you may detect the typical led blinking of the level 2 initialization, without having requested that mode.

10.5.5 What to do in case of error?

If an error is detected during the self test, run the test again to confirm the result. If test error persists, then contact the factory for return and repair procedure.

10.5.6 Important remark

When performing a level 2 self test, it is important to let the test run until the end, if you stop the test before the end, the flash memory may contain random data that may cause unexpected operation of the eWON when it will start.

For this reason, a self test must always be continued until the "USER" led displays the test result.

In case if trouble you can perform the level 2 initialization again to return to a normal situation.

10.6 Table of comparisons between eWON types

eWON type		500	2001	4001		2101	4101	2005CD		4005CD		2005		4005		4002		4102
optional modem			modem		modem	modem	modem		modem		modem		modem		modem		modem	modem
hardware specificities	RTC battery			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	isolated COM1			X	X		X			X	X			X	X	X	X	X
	additionnal 8 DI + 2 DO															X	X	X
	additionnal 2 serial ports															X	X	X
	MPI port	As option (replacing the Serial)										Unavailable						
software specificities	Historical logging			X	X		X			X	X			X	X	X	X	X
	viewON			X	X		X			X	X			X	X	X	X	X
	PPP connection (In/Out)		X		X	X	X		X		X		X		X		X	X
	Routing (IP forwarding + Static routes + Proxy)		X		X	X	X	X	X	X	X	X	X	X	X		X	X
	VPN					X	X	X	X	X	X	X	X	X	X			X

Table 187: Features available depending on the eWON type

10.7 Duplicate IP detection (User Led blinking Red)

Since firmware 4.3, eWON performs a check on the IP network in order to avoid duplicate IP. eWON makes this test at power up to see if its IP address is not conflicting with another device.

If eWON is configured with the same IP address than another device, eWON will not start and the USER LED blinks continuously with the following pattern:

short red light + pause + long red light + pause

Resolution:

- 1) Isolate your eWON from the conflicting device
The best way is to use a direct crossed IP cable to directly link your PC with the eWON (without a hub)
- 2) Reboot the eWON
- 3) Change the eWON IP address (with eBuddy, you can download from <http://www.ewon.biz> *Support/Download Software*)

When eWON is blocked, the duplicate IP test is made again every 10 minutes. If the conflicting device is not present anymore, then eWON will start normally.

10.8 Rockwell compatibility matrix

This document lists the compatibility matrix between eWON and the Rockwell- Allen Bradley PLC family.

PLC Name/Type	EIP	DF1	eWON Version	Comments	IO Server Name
PLC5	x	x	Rev 5.1		DF1
SLC500	x	x			DF1
MicroLogix	x	x			DF1
CompactLogix	x	x	Rev 5.3	DF1 only since Rev 5.3	ABLOGIX
ControlLogix	x	x	Rev 5.3	DF1 only since Rev 5.3	ABLOGIX
FlexLogix	x	x	Rev 5.3	DF1 only since Rev 5.3	ABLOGIX

Table 188: Rockwell compatibility matrix

10.9 GSM modem Led behavior

MODEM		
Status		
Modem Detected	Internal MULTIBAND GSM	
Signal Level	31	
Network	Home network	
Operator	B mobistar	(NB: B mobistar = 20610)
Config		
Modem Init String	AT&FE0&D2&C1+IFC=2,2;+CSNS=	clear this line to restore default value
Operator selection	Automatic	
Display Level on led	<input checked="" type="checkbox"/>	
GSM PIN Code	*****	

Figure 142: GSM level display on led

The modem led default behavior is to go solid red while PPP Is established and off otherwise. If this option is selected, the modem led will display the signal level as described here:

The led must display 2 informations:

- if the modem is connected.
- the signal reception level.

The representation uses an 8 seconds pattern, the first 4 seconds display the signal level and the last 4 seconds the connection state.

Signal level: the signal level is displayed 4 times. The led goes on between 100msec to 900msec according to the signal level. Then the blink is repeated 3 more times.

Connection state: for the last 4 seconds, the led is ON if connection is established (PPP connection established). The led is OFF if there is no ongoing connection.

REM: the signal level displayed here is a rough indication, the exact level can be read from the modem configuration page in the eWON.

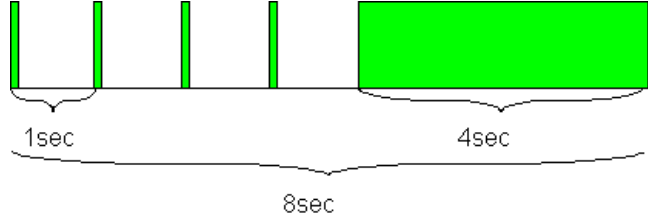
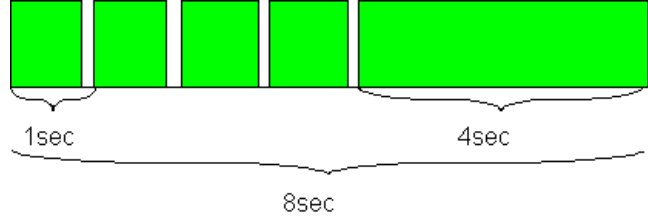
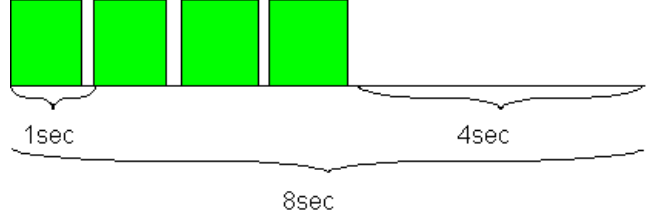
Connected Low signal level	
Connected High signal level	
Disconnected High signal level	

Table 189: GSM Level display patterns